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Deeper in Debt

The Changing Financial Conditions of U.S. Households

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Executive Summary

This study is concerned with the explanation for and potential consequences of the growing indebtedness of the U.S. household sector. The principal findings are:

- Household debt relative to household income has grown dramatically since the early 1970s.

- According to the most reliable evidence, the growth of aggregate household debt has not been matched by a parallel growth in assets.

- Households at different income levels have been borrowing for different reasons. For those in the lower 80 percent of the income distribution, borrowing is largely a result of the need to maintain living standards in the face of the stagnation in real incomes since the early 1970s and the corresponding rise in real living costs, especially for housing. This "necessitous" borrowing has not been accompanied by any parallel growth in financial assets.

  On the other hand, those in the top income quintile—accounting for roughly one half of the level and growth of household indebtedness—have not experienced a slowdown in real income growth. Their borrowing appears to have gone to support speculation in financial markets and the maintenance of high consumption levels.

  Together, these factors create a picture of the growth in household indebtedness that is the financial mirror of the widely-noted trend in the real economy over this period toward greater inequality.

- The incidence rates for mortgage foreclosures and delinquencies as well as for personal bankruptcies—all indicators of household financial stress—are on the rise.

The growth of aggregate household debt has not been matched by a parallel growth in assets.

Several widely-held notions about the growth in household indebtedness do not withstand scrutiny:

- The growth in household indebtedness is not a result of demographic change. The fact that the baby-boom cohort was in its prime borrowing years explains very little of the growth of household debt-to-income ratios.

- There is minimal evidence that rising indebtedness reflects a willingness on the part of ordinary households to finance a "consumption binge" with a corresponding "debt binge." Such attitude shifts toward debt are not apparent in survey evidence or other indicators.

- It is true, as is frequently reported, that *in the aggregate*, debt-servicing ratios—the ratio of debt payments to income—have been fairly stable despite the growth in debt relative to income. However, the proportion of the population with very high debt-servicing ratios—

thus facing severe debt burdens—has grown. This finding provides an explanation for the obvious direct indicators of households' increasing financial stress—the rising rate of mortgage delinquencies, foreclosures, and household bankruptcies.

This analysis offers important conclusions for national economic stability. Among other things, the high level of indebtedness in the household sector is likely to make a recession more severe than it would be with a lower level: households will become less capable of servicing their outstanding liabilities which will, in turn, make financial institutions more reluctant to extend loans. Aggregate demand will therefore fall by more than it normally would. These considerations become even more serious given that the federal government, already over-burdened with the consequences of the savings and loan crisis, has become less capable of providing costly safety nets for an unstable financial system.

The high level of indebtedness in the household sector is likely to make a recession more severe than it would be with a lower level.

Introduction

One of the most serious issues facing the U.S. economy today is the growing extent to which all major sectors of the economy have become dependent on debt to finance their expenditures. Considerable attention has been focused on this issue; mainly, of course, on the borrowing by the federal government, but increasingly on financial trends in the private sector as well. Major figures in the world of finance, including Federal Reserve Chairman Alan Greenspan, former Chair Paul Volcker, New York Federal Reserve Bank President Gerald Corrigan, Wall Street analyst Henry Kaufman, and Lazard Freres partner Felix Rohaytn have voiced their concern over the rise of private, as well as public, debt financing. The press has also long been attentive to the issue (though in the past year or so somewhat less disquieted than previously) in their presentation of the basic trends.[1]

Despite the attention attracted by the debt situation, the extensive analytic studies of the situation have been limited in scope. The borrowing behavior of the federal government, of course, is a prime subject in current professional debates, and the financial practices associated with the leveraged buyout movement have also received broad scrutiny.[2] By contrast, the changing patterns of household finance have been largely neglected, even though household borrowing absorbs roughly the same proportion of total credit supply as does borrowing by the federal government and nonfinancial corporations.

The aim of this project is to help fill this gap in the analytic literature through a study of the leveraging of U.S. households. In 1988, the household debt/disposable income ratio reached a post-war peak of 93.9 percent, and the preliminary figures for 1989 show that the ratio has remained at that level. This pattern—along with the concurrent trends for corporations and the U.S. government—carries important implications for the stability of the U.S. financial structure and for the macroeconomy in general. Moreover, the household debt trend is of particular concern because it is a direct indicator of the financial well-being of the American people.

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This paper utilizes several different approaches to examine the financial situation of U.S. households: aggregate descriptive data, disaggregated descriptive data, and formal econometric testing. We rely on these different approaches because, inevitably, each contains ambiguities and gaps. Considered alone, the findings generated from each perspective provide an inadequate foundation for deriving conclusions. But by considering the cumulative results from all three sources, we increase our capacity to reach reliable conclusions.

In the remainder of this section, I briefly discuss some of the methodological questions which have arisen in the study. The second section presents descriptive statistics showing the growth of household debt since 1965. The third section evaluates the relevant aggregate data on household expenditures and income growth. The fourth section considers alternative explanations for the patterns described in the second section and considers

aggregate descriptive statistics to evaluate the explanatory power of the various arguments. In the fifth section, more formal econometric evidence is presented for considering the alternative theories. Only summaries of the econometric evidence are presented in this section; the full model is presented in Appendix A. In the sixth section, disaggregated data are considered to evaluate the competing theories more carefully. The data here are disaggregated by income quintiles, working under what should be the noncontroversial assumption that households' financial options are closely linked to their income levels and their financial activities should thus vary between quintiles. The aggregate explanations may therefore obscure very different types of behavior occurring within different income groups. In the concluding section, the implications of the foregoing analysis are briefly considered, both for the financial viability of the households and, more broadly, for the U.S. financial structure and macroeconomic stability.

Households' financial options are closely linked to their income levels.

Methodological Issues

The three kinds of evidence considered in this study are: descriptive statistics for the aggregate household sector, drawn from the Federal Reserve Board's Flow of Funds Accounts; econometric tests, which consider the aggregate data in a more formal framework; and disaggregated descriptive statistics, which are taken from the Federal Reserve Board's Survey of Consumer Finances for 1970, 1977, 1983, and 1986.

As is usually the case in such empirical studies, methodological issues arise frequently here. These issues are described at length in the appendices. Appendix A explains the econometric model, the results of which are summarized in the fifth section; and Appendix B explains how results were generated from the disaggregated data, which in some cases required imputation of missing data.[3]

Evidence on Aggregate Household Debt Growth

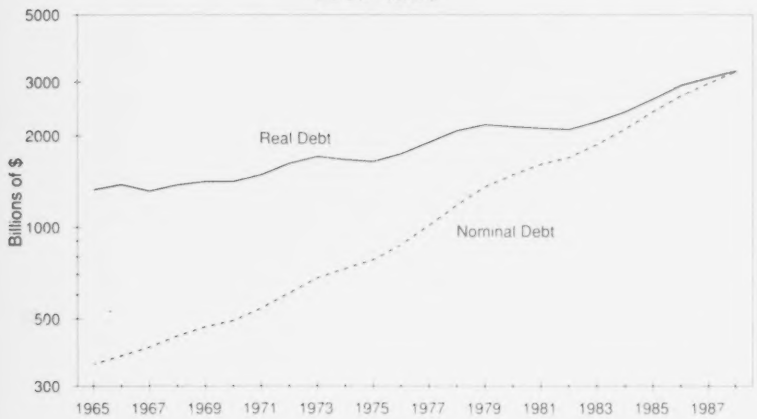
The Movement of Outstanding Household Debt

We begin by considering the raw figures for aggregate outstanding household liabilities between 1965 and 1988. This plot shows that outstanding household debt rose continuously from 1965 to 1988, beginning at $359 billion in 1965 and peaking at nearly $3.3 trillion in 1988. The rate at which household debt rose was fairly steady throughout this period.[4]

Outstanding household debt rose continuously from 1965 to 1988 beginning at $359 billion in 1965 and peaking at nearly $3.3 trillion in 1988.

These initial figures are not adjusted for inflation, however, and certainly such an adjustment must be made if we are to determine whether the phenomenon of increasing household debt signifies anything more substantive than an inflation adjustment. Thus, Figure 1 also plots the real level of outstanding household liabilities. Here the ascent of the debt aggregate is much less steep than with the nominal debt figures. We also observe a small acceleration in the rate of debt accumulation beginning in 1983. Overall, though, there is nothing in Figure 1 which suggests exceptional changes in household borrowing patterns between 1965 and 1988.

Figure 1
Outstanding Household Debt
1965-1988



Source: Federal Reserve.
Note: Data converted to log scale.

With the data plotted in Figure 2, we can consider the growth of real household debt more carefully. Figure 2 plots the annual growth rate of real outstanding household liabilities—that is, simply the rate of change of the real debt figures shown in Figure 1. As we see, debt growth varies in a strongly cyclical pattern. The cyclical peaks are associated with business cycle peaks (1972, 1977, and 1985) and the troughs with recessions (1970, 1974, and 1980). Figure 2 also plots the trend over the full period of the annual growth rate figures. A mild upward trend is observable here, but it is dominated by cyclical movements. This upward growth trend is also reflected in the fact that the most recent peak in 1985 exceeded peaks in previous cycles, and even the 1986 growth figure exceeded any peak before 1985. Still, given the downturn in growth in 1987–88, we cannot conclude that the current period represents an exceptional phase of growth in real terms.

Debt growth varies in a strongly cyclical pattern.

Figure 2
Annual Growth Rate of Real Household Debt and Full-Period Growth Trend Line, 1965-1988

Source: Federal Reserve

The Growth of Household Debt Relative to Income and Assets

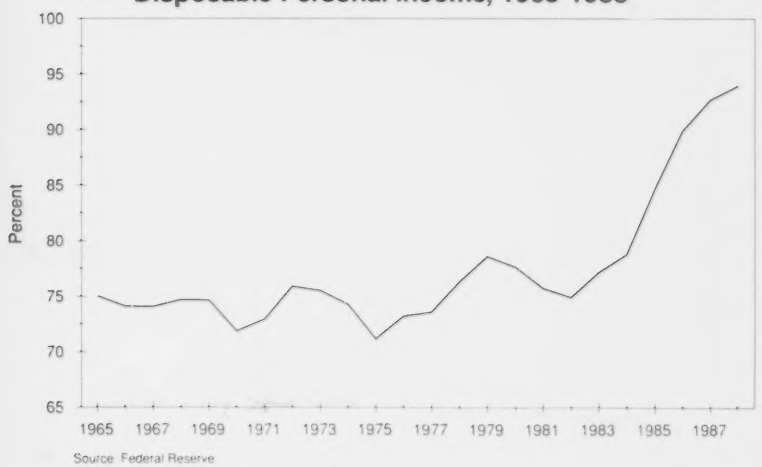
The growth of household debt can be seen as exceptional when measured relative to other components of the households' accounts. This point emerges from the next two figures, which contrast sharply with the patterns for real debt growth shown above.

Figure 3 plots the level of total household debt relative to disposable personal income. As the figure shows, this ratio has been rising sharply, if not steadily, since the 1972 peak. Moreover, we see that the strongest upturn to date begins in 1983 and continues to the present. By 1988, this ratio had risen to 93.9 percent, a post-war peak.

The growth of household debt can be seen as exceptional when measured relative to other components of the households' accounts.

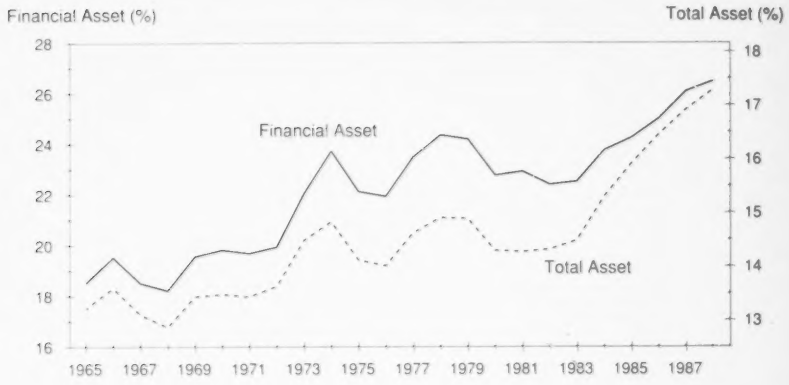
Roughly similar patterns can be observed in considering the level of total liabilities relative to both total household assets and financial assets. These are plotted in Figure 4. The behavior of the debt/assets ratio is different from the debt/income ratio. In the former we observe two periods of rapid ascent—from 1968 to 1974 and from 1982 to the present. The basic similarity with the debt/income ratio is that the period since the mid-1970s is once again characterized by rapid, if not steady, increase and that the peak of the ratio over the full period, 17.3 percent, is reached in 1988.

Figure 3
Outstanding Household Debt Relative to Disposable Personal Income, 1965-1988



Source: Federal Reserve

Figure 4
Outstanding Household Debt Relative to Total and Financial Assets, 1965-1988



Source: Federal Reserve

When debt is measured relative to financial assets, homes, and all other tangible assets are excluded from the asset category. As with the other ratios, this series rises sharply from the mid-1970s to the present. But the movement is different here in that the period of most rapid increase occurs from 1973 to 1977. Still, the figure for 1988, 26.5 percent, represents the peak for the full period.

The growth of debt has experienced a racheting upward since the mid-1970s. Moreover, this uptrend has been most pronounced since 1983.

With all three ratios, the growth of debt has experienced a ratcheting upward since the mid-1970s. Moreover, this uptrend has been most pronounced since 1983. These results show that while in real terms the absolute level of household debt may not be growing at an exceptional rate, its rate of growth relative to household income and assets since the mid-1970s has been.

Before exploring these results further, we need to consider the validity of using either household income, total assets, or financial assets as benchmarks in measuring the growth of debt. In all three cases, the goal in making these calculations is to measure debt growth relative to the capacity either to service the debt or, more generally, to generate purchasing power through income or wealth holding. In all three cases, these ratios can serve only as rough indicators. Many factors are not incorporated in these measures—interest on the debt, debt maturities, the distribution of debt, income and wealth, and inflation—all of which can alter the real burden to a significant degree. The influence of these factors will be considered later.

For now, however, we need to note that even as a broad benchmark, the debt/income ratio is superior to either of the ratios using assets as the denominator. There are several reasons for this: the reporting of data on assets is less reliable, assets are more heterogeneous as an aggregate, assets are more subject to rapid and significant revisions in value, and the distribution of asset ownership is more concentrated than the distribution of income. In short, as a broad measure of purchasing power or the capacity to service debt, income is a more reliable benchmark. In what follows, I will therefore focus more on this measure than the asset ratios.

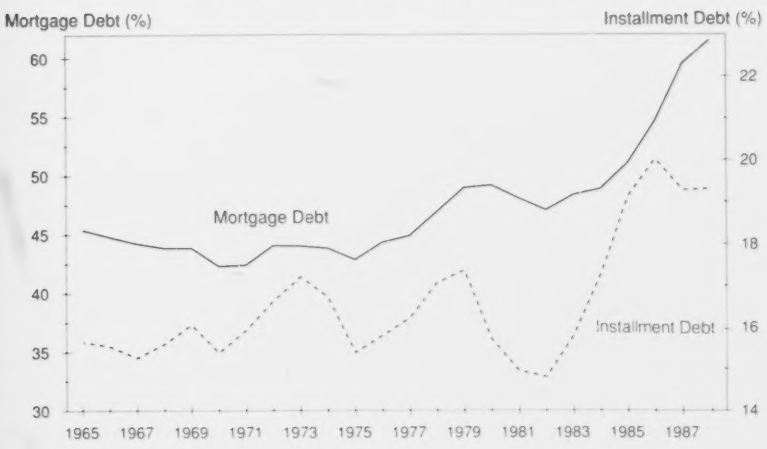
Movement of Debt Components

As noted above, the major components of household liabilities are home mortgage loans and consumer installment credit. Since the mid-1960s, mortgage debt has accounted for between 58.1 percent and 65.5 percent of all household liabilities. Installment credit has ranged between 19.8 percent and 22.8 percent of all loans. In other words, these two components of household debt constitute roughly 80 percent of all household liabilities, and variation in their relative magnitudes has been fairly small until the present. The remainder of the total of household liabilities consists of noninstallment credit and a variety of other instruments, including student educational loans.

During the period beginning in the mid-1970s, both home mortgage loans and installment credit rose relative to disposable income.

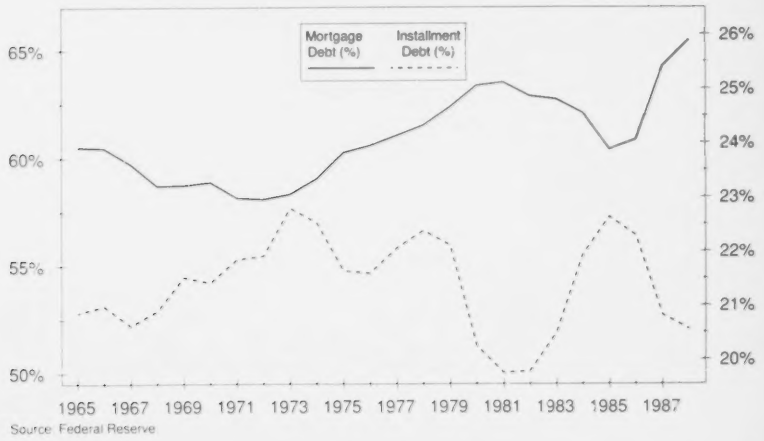
As a first generalization, we can say that during the period beginning in the mid-1970s, both home mortgage loans and installment credit rose relative to disposable income. This is shown in Figure 5. In Figure 6, which plots mortgage and installment debt relative to total liabilities, we see that the relative rates of growth of these two major debt components has alter-

Figure 5
Home Mortgage Debt and Consumer Installment Debt Relative to Disposable Personal Income, 1965-1988



Source: Federal Reserve

Figure 6
Home Mortgage Debt and Consumer Installment Debt Relative to Total Household Liabilities, 1965-1988



Source: Federal Reserve

nated over time. Of potential significance in the Figure 6 movements has been the relative rise of home mortgage loans since 1985 to its peak figure in 1988, and the corresponding fall in installment debt. This is probably associated with two important changes in household financial conditions, though the pattern is still too current to offer definitive judgments. The first change is the increasing use of mortgage debt, especially home equity loans, for purposes other than housing finance. Such a pattern is suggested by the fact that the value of outstanding home mortgages rose relative to the value of owner-occupied real estate over the most recent business cycle, from 37.7 percent in 1983 to 49.5 percent in 1988—the 1988 figure representing a peak for the full post-war period. Given the phased elimination of interest deductibility for nonmortgage debt currently being implemented, we would expect such a trend to gather strength over time: mortgage borrowing will increasingly substitute for installment debt as a means of financing nonhousing purchases.

Mortgage borrowing will increasingly substitute for installment debt as a means of financing nonhousing purchases.

The second possible influence on the recent increase in the mortgage debt ratio is the real increase in house prices, relative to incomes. We will explore this issue in more depth below.

Summary of Aggregate Data Review

The foregoing review of the aggregate data provides us with the following three basic points:

1. The nominal increase of household debt has been rapid since 1965, especially since the mid-1970s. In real terms though, household debt growth has been generally unexceptional since 1965. Deviating from the normal cyclical pattern since 1965, an accelerated growth pattern emerged in the mid-1980s. This deviation took the form of a higher cyclical peak growth rate in 1985, but since then, growth has again decelerated. Generally, the real growth of debt is dominated more by cyclical fluctuations than any trend pattern.

2. By contrast, a sustained trend increase in household debt does emerge when debt is measured relative to either household income, total assets, or financial assets. With all three ratios, this upward movement rose to new highs in 1988. For several reasons, the debt/income ratio is the preferred measure of relative debt growth.

By contrast, a sustained trend increase in household debt does emerge when debt is measured relative to either household income, total assets, or financial assets.

3. Both home mortgage and consumer installment debt—which together constitute roughly 80 percent of household debt—have risen relative to income since the mid-1970s. The growth of mortgage relative to installment debt has fluctuated regularly; but the most recent relative increase in mortgage debt may be associated with two important and durable changes in household financial conditions—the use of mortgage debt for nonhousing expenditures and the rise of home prices.

The primary change in household financial patterns needing explanation is the growth of debt relative to income (and assets). Neither the real growth of debt considered by itself, nor the particular patterns for either mortgage or installment debt exhibit comparable secular change over the period of study.

I attempt to explain this pattern through the following steps. First, I consider aggregate data trends on household spending and income. This is done to establish some context for the rising debt/income ratio. In strictly accounting terms, the same increase in net borrowing/income—i.e., changes in outstanding debt relative to income—may be associated with very different economic circumstances. Two extreme alternative possibilities would be rapidly increased spending and somewhat slower income increases, or declining incomes and less rapidly declining spending.[5] It will be helpful to identify what set of circumstances has actually prevailed since the mid-1970s. After having reviewed the spending and income data, several alternative behavioral hypotheses will then be presented and the three types of evidence will be considered in evaluating the relative explanatory power of these hypotheses.

Household Expenditure and Income Growth Patterns

Household debt growth is in some way associated with a "consumption binge" by households.

I consider here the aggregate data on real household spending and income to provisionally evaluate the extent to which the rising debt/income ratio can be associated with either a period of rapidly increased spending or declining income. This discussion thus provides some initial evidence on the question of whether household debt growth is in some way associated with a "consumption binge" by households. (I take up later the other possibility that increased borrowed funds are used to support increased savings/financial asset purchases). Figure 7 plots the movement of real spending per household from 1965 to 1988.[6]

I have divided the full time period into two phases, the first 1965 to 1974, corresponding to the years of a stable debt/income ratio, and the second, 1974 to 1988, corresponding to the years of sharp increase in the debt/income ratio. In addition to presenting the actual spending levels for these years, the figure also plots a line for each phase which gives the trend movement of spending during the phase.

Figure 7
Real Mean Spending Per Household with Trend Lines for 1965-1974 and 1974-1988

Sources: Federal Reserve; Census Bureau.

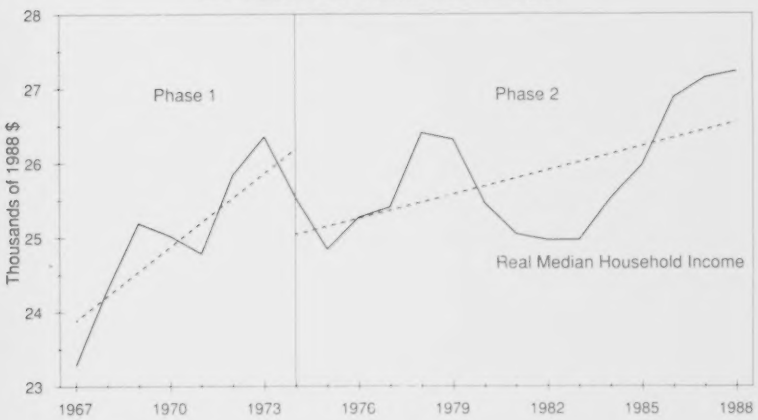
Figure 7 shows that mean household spending rose fairly steadily over the full period. During phase 2, the trend line dropped somewhat and fluctuations sharpened. But beyond this, no dramatic change occurred in spending patterns over this period. These figures, in other words, contradict the idea that American households enjoyed a "consumption binge" during the 1980s. Even if one considers the period of most rapid spending growth, from the trough of 1982 to the peak of 1988, mean spending growth increased at an average annual rate of 2.7 percent, hardly an excessive rate by any absolute or historical measure.

These figures contradict the idea that American households enjoyed a "consumption binge" during the 1980s.

In Figures 8 and 9, real household income levels are presented. Figure 8 gives data on median income and Figure 9 on mean disposable income. With the median figures we see that a rapid ascent occurred during phase one. During phase two, fluctuations in income became much sharper and the trend growth rate declined significantly. Indeed, after the recession of the early 1980s, median income did not recover to its previous 1978 peak until 1986.

The mean income data shown in Figure 9 contrasts with the median figures. Here we see a fairly steady growth rate of income throughout the full period. Mean income fluctuated more sharply during phase two, but to a lesser extent than with the median income figures.

Figure 8
Real Median Household Income with Trend Lines for 1967-1974 and 1974-1988



Source: Census Bureau
Note: Figures not available for 1965-66

Figure 9
Real Mean Disposable Household Income with Trend Lines for 1965-1974 and 1974-1988

Sources: Federal Reserve, Census Bureau

In evaluating these findings, the most important points to keep in mind are:

We cannot associate the rise of the debt/income ratio with a "boom" in either spending or income for households in the aggregate.

1. Neither the mean spending series nor either of the income series showed an acceleration of growth in phase 2 relative to phase 1. The trends for both income and spending growth were either stable or declining in phase 2. It is therefore clear that we cannot associate the phase 2 rise of the debt/income ratio with a "boom" in either spending or income for households in the aggregate. This observation should provide a useful backdrop for evaluating behavioral hypotheses for the phase two aggregate debt/income increase, especially the notion that household debt growth has been associated with a debt-led consumption binge.

2. Concerning the mean and median income data: mean income figures tend to be higher than median income figures because the very high incomes at the top of the distribution skew only the mean upward. Thus, the median figures better portray the situation faced by middle and lower income households. In addition, the fact that the mean diverges upward relative to the median over time suggests *increasing* income and spending disparities between high-income households and the rest of the population.

(Such results are consistent with the more systematic evidence on a worsening U.S. income distribution which can be found in Mishel and Simon, 1988; Harrison and Bluestone, 1988; and Levy, 1987.) Thus, the disparity between mean and median income patterns underscores the importance of investigating the different motives for increases in the debt/income ratio among households at different points in the income distribution. Unfortunately, median data on consumption spending for the aggregate economy are not available on an annual basis, so one can only surmise as to whether a similar divergence would occur with the mean figures presented in Figure 7. We will address this issue later in the study through other data sources.

The fact that the mean diverges upward relative to the median over time suggests increasing income and spending disparities between high-income households and the rest of the population.

Explanations for the Growth of U.S. Household Debt

Through financial innovation, deregulation, and an increasingly aggressive marketing posture of financial institutions, more credit has become available to U.S. households.

The explanations considered here include a supply-side perspective; specifically, that basic and widespread changes in the practices of financial institutions have made credit increasingly available to households. I then consider several factors potentially affecting the demand for credit by households: demographic change; increasing household optimism which encouraged a debt-led "consumption binge"; changes in interest rates and financial asset yields; and "necessitous" borrowing—the demand for debt by households to maintain living standards as real incomes grow more slowly than the cost of necessities.

Growing Availability of Household Credit

It is indisputable that through financial innovation, deregulation, and more generally, an increasingly aggressive marketing posture of financial institutions, more credit has become available to U.S. households. The two major changes that occurred as a result of financial innovation and deregulation were, first, the elimination of interest rate ceilings, and second, the weakening of restrictions on the type of loans different intermediaries could offer. As a result of these changes, the marketing of new types of loans and services—including home equity loans by banks and savings and loans and cash management accounts by security brokerage firms—has burgeoned. Moreover, the elimination of interest rate ceilings has created stronger incentives for financial institutions to increase lending to households. When ceilings were in place, lending institutions restricted the supply of funds when market interest rates rose above the ceiling rates. In addition, with the elimination of ceilings, financial institutions have been able to offer variable rate loans. These loans shift the burden of risk associated with interest rate fluctuations from lenders to borrowers, and thus encourage more lending.[8]

The most widely cited innovation in marketing loans to households has been the widespread distribution of credit cards. Revolving credit, comprised mostly of outstanding balances on credit cards, has been the fastest growing component of consumer installment credit for the past several years. For 1988, it constituted 27 percent of total installment credit. Credit cards are believed to have encouraged the growth of household debt in two ways: by increasing the availability of credit for households and facilitating the process of obtaining it, and by allowing for "convenience use" of the cards, in which the cards simply substitute for cash or checks and bills are regularly paid before incurring interest charges.[9]

In assessing the impact of these financial changes, it is crucial to keep in mind the data presented in Figures 1 and 2 showing that the real growth of lending since the mid-1970s did not increase any more rapidly than between 1965 and 1974, despite the lack of financial innovation in the earlier period. Despite all the changes in financial practices that have taken place, the supply of funds has not been growing at a significantly accelerated rate in real terms.

However, it might be argued that, unlike the less flexible industry that existed in earlier decades, the highly flexible industry that emerged out of the innovations of recent years would clearly be willing and able to encourage household borrowing growth even as real household income growth declined. To that extent, one could attribute part of the rise in the household debt/income relationship to supply-side changes in financial markets. Since this study is concerned with the changing financial conditions of households themselves, it will concentrate primarily on the demand side.

Households' demand for borrowed funds varies with the life-cycle phase of the household.

Demographic Change

It is a well-known fact that households' demand for borrowed funds varies with the life-cycle phase of the household. Table 1 gives figures for debt/income ratios by age group for 1970, 1977, 1983, and 1986 confirming this point. As the table shows, debt/income ratios are highest among households whose "householder" is in the 25–34 or 35–44 age group. This is because such households are in the midst of major purchases of homes and expensive durable goods like cars and washing machines. Younger households have not yet hit their stride as consumers, while older households make fewer home and durable purchases and have largely paid off their previous debts.

The way in which this age distribution of outstanding debt can affect aggregate debt trends is evident: if the 25–44 group rises as a proportion of all households, this would exert upward pressure on the aggregate debt/income ratio. And as is well-known, the maturing of the baby-boom generation has meant that the 25–44 segment has indeed been growing as a portion of the population in the last decade. But it is also the case that the proportion of households over 65 has been rising steadily throughout the postwar period. Because these older households carry the least amount of debt, their rise as a share of the population will tend to exert downward pressure on the aggregate debt level, at least partially counteracting the increased debt of the 25–44 group. Note also, in Table 1, that with only a few exceptions, there was a pronounced tendency for the debt/income ratio to rise between 1970 and 1986, holding the age group constant.

TABLE 1

Debt/Income Ratios by Age of Householder

(percentages)

	1970	1977	1983	1986
Under 25	48.4%	65.1%	46.9%	
25-34	68.4	89.8	79.4	87.4[a]
35-44	79.8	81.4	89.0	81.5
45-54	57.0	58.4	76.0	62.0
55-64	31.7	35.7	51.7	51.8
65-74	28.6	19.4	21.7	41.2
75 and over	7.3	7.6	22.4	4.5

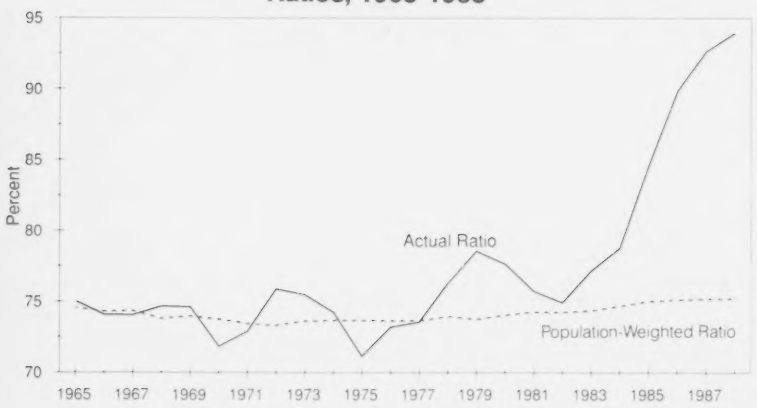
[a]Figure includes all householders 34 years old and younger.

To formally consider the extent to which these demographic trends have affected aggregate debt data, I constructed a variable which estimates a population-weighted mean debt/income ratio for all households. The way this demographic variable was developed was to take the average debt/income ratios for each age-group based on the 1970, 1977, and 1983 figures shown in Table 1. (The 1986 ratios were excluded because there is no age disaggregation for householders below 34 years old.) I then multiplied these averages by the proportion of the population each age group represented in every year. The result is an estimate of what the mean aggregate debt/income ratio would have been for every year, if nothing else besides the proportion of households in each age group changed from year to year (a more detailed explanation of how this variable was constructed is given in Appendix A).

The rise in the debt/income ratio cannot be explained by the change in the age distribution of the population.

This population-weighted debt series is plotted in Figure 10. As presented in the figure, the series has been scaled to allow for direct comparison with the debt/income data series shown in Figure 1 and reproduced here.[10] Figure 10 shows clearly that the range of variation for the population-weighted ratio is quite small, not at all comparable to that for the actual debt/income ratio. The population-weighted series did rise from the mid-1970s onward. But it is doubtful that this mild increase can explain the sharp rise in the actual ratio. This preliminary examination shows that the rise in the debt/income ratio cannot be explained by the change in the age distribution of the population. We will test this proposition more formally through the econometric exercise.

Figure 10
Actual and Population-Weighted Debt-Income Ratios, 1965-1988



Source: Federal Reserve
Note: See Appendix A for construction of population-weighted ratio.

Increasing Household Optimism

An argument advanced by a wide range of economists is that contemporary Americans have become increasingly sanguine in their attitudes toward borrowing and that this has caused a debt-led consumption binge. The contention is that as memories of the 1930s Depression faded and post-war prosperity was sustained, households became more optimistic. Consequently they are now less willing to save and more eager to borrow, especially the baby-boom generation that, in any case, is in the midst of their heavy borrowing years. Pearce, for example, writes:

> The relative stability of the U.S. economy for most of the post-World War II period may have persuaded households that greater use of credit was not imprudent. People that experienced the Great Depression are often thought to be reluctant to incur sizable financial liabilities, while the post-World War II generations, accustomed to rather mild business cycles, may be more confident that credit is useful and manageable (1985, pp. 9–10).

New York Federal Reserve Bank President Gerald Corrigan even speaks of a "cultural revolution about debt" in which "homeowners no longer burn the mortgage when it is paid; they quickly get another, and preferably one which, in effect, requires no payment of principal." (1985, p. 6)

Contemporary Americans have become increasingly sanguine in their attitudes toward borrowing and this has caused a debt-led consumption binge.

It is difficult, of course, to accurately measure psychological attitudes toward debt. But some direct systematic evidence is available, coming out of the "Surveys of Consumer Finances." In the surveys for 1959, 1967, 1977, and 1983, several questions were asked about consumer attitudes toward installment debt. The questions included: "Is installment buying a good or bad idea?" and "What is an appropriate reason for borrowing?" The results for the aggregate sample are summarized in Table 2. These show that no significant shift occurred over time in response to either question. It may be that certain sectors of the population did experience increased optimism. But this point can only be evaluated using disaggregated data, which will be done below.

Stagnating incomes amidst rising living expenses may indeed have engendered a greater willingness by households to borrow.

One may contend that the rising debt/income ratio during a period of slower growth for real household incomes signifies a shift in household attitudes of a different sort: a greater willingness to incur debt even in less-than-optimal circumstances. This argument is more compatible with two kinds of evidence. The first is the fact, noted earlier, that real incomes for most households have stagnated since 1974. The second is that, of the attitude questions shown on Table 2, the only one for which the percentage responding "yes" rose sharply over time is whether households consider it appropriate to borrow "to cover living expenses when income is cut." Thus, stagnating incomes amidst rising living expenses may indeed have engendered a greater willingness by households to borrow. But this kind of attitude shift cannot fairly be said to represent household optimism. It would be a very different phenomenon from taking on debt to finance *discretionary* consumption expenditures. The extent to which debt has risen to finance necessary spending in the face of income stagnation or slowdown—the evidence for such a "necessitous" credit demand—will be addressed at length below.

With the available data, it is not possible to measure attitude shifts directly in the econometric tests. However, I will be sensitive to indirect indicators of increasing optimism in evaluating the results of the tests.

TABLE 2

Household Attitudes Toward Installment Debt

Question: Is installment buying a good or bad idea?

	Percentage distribution			
	1959	1967	1977	1983
Response:				
Good	60%	48%	51%	44%
Good or bad depending	7	11	32	31
Bad	32	40	15	24
Not ascertained	1	1	3	1

Question: What is an appropriate reason for borrowing?

	Percentage Responding Yes			
	1959	1967	1977	1983
Reason				
Cover expenses due to illness	86%	80%	85%	82%
Finance educational expenses	70	77	80	79
Finance purchase of automobile	67	65	84	82
Finance purchase of furniture	44	52	60	49
Consolidate bills	44	43	47	49
Cover living expenses when income cut	26	40	49	47
Finance boats, snowmobiles, and other hobby items	—	—	23	19
Cover expenses of vacation	5	9	17	13
Finance purchase of fur coat or jewelry	2	4	6	5

Sources: Avery, Elliehausen, Gustafson, and Canner, *Survey of Consumer Finances*, 1983; Durkin and Elliehausen, *Consumer Credit Survey*, 1977; George Kantona, James N. Morgan, James Schmiedeskamp, and John A. Sonquist, *Survey of Consumer Finances*, 1967.

Secondary Source: Federal Reserve Bank of Kansas City, *Economic Review*, July/August 1985, p. 10.

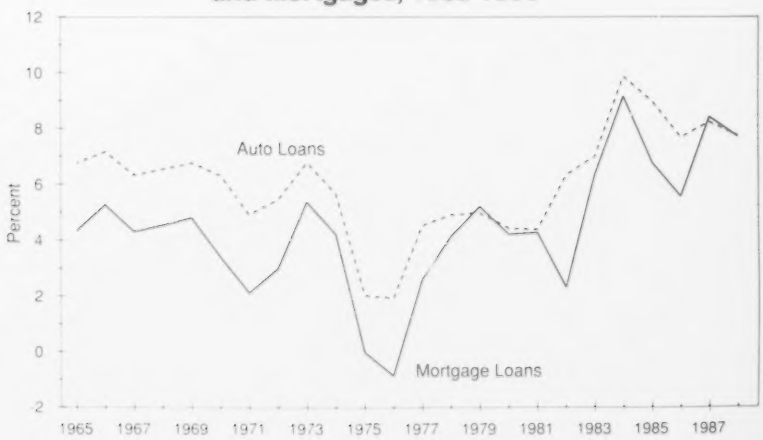
Changes in Interest Rates, Debt Burdens, and Financial Asset Yields

Real debt burdens can decline either when the real interest payments on a debt instrument fall or when the maturity of the instrument is stretched out.

Real Interest Rates and Debt Maturities. Real debt burdens can decline either when the real interest payments on a debt instrument fall or when the maturity of the instrument is stretched out. Both considerations have been cited as having encouraged the growth of household debt since the mid-1970s. Figure 11 plots real interest rates on both consumer auto loans and mortgage loans since 1965. Real, as opposed to nominal, interest rates measure the difference between the cost of borrowing money and the expected inflation rate. As the figure shows, real rates on both consumer and auto loans descended sharply in 1974, and hovered near zero during the mid-1970s. Moreover, if one also accounts for the tax deductibility of interest payments, real after-tax borrowing costs were low for most of the 1970s.

To some extent, such low rates undoubtedly encouraged greater borrowing. However, a fuller examination of even this descriptive evidence suggests that this factor was not a primary determinant of the observed rise of the debt/income ratio. To begin with, as the figure shows, real interest rates have been at high levels since 1982, and the debt/income ratio has not fallen as a result—indeed, it has continued to rise to its current peak level. The influence of real interest rate movements thus appears weak, both when rates are low and high. But this point clearly needs to be examined more formally, as will be done in the econometric analysis.

Figure 11
Real Rate of Interest on Auto Loans and Mortgages, 1965-1988



Source: See Appendix A

In addition, a fuller treatment of the effects of debt burdens on borrowing behavior requires that evidence on interest rate levels be supplemented with that on loan maturities. The experience with loan maturities is mixed. With mortgage loans, no pronounced trend has been exhibited since the mid-1960s. However, maturities on certain types of consumer loans have lengthened considerably since the mid-1970s. With new car loans, for example, average maturities stretched from 38 months in 1975 to 56 months in 1988. Table 3 presents the full set of figures on maturities between 1975 and 1988 for both new and used cars.

Maturities on certain types of consumer loans have lengthened considerably since the mid-1970s.

This 10-year period of lengthening consumer loan maturities lowered the real debt burden on these loans still further during the years when real interest rates were already low, and countered to some extent the very high rates that emerged in 1983. Again, though, the overall impact of these changes appears weak. First of all, its influence was confined to a subset of consumer loans only, which in turn accounted for only about 25 percent of all household liabilities. Moreover, the change in the maturities of consumer loans does not alter the fact that the debt/income ratio on consumer loans rose both during periods when debt burdens were high and low.

TABLE 3

Average Maturities on Auto Loans Issued by Finance Companies (in months)

Year	New Car Loans	Used Car Loans
1975	38	29
1976	39	30
1977	41	31
1978	43	33
1979	44	34
1980	45	35
1981	45	36
1982	46	37
1983	46	38
1984	48	40
1985	52	41
1986	50	43
1987	53	45
1988	56	47

Source: *Federal Reserve Bulletin*, various issues.

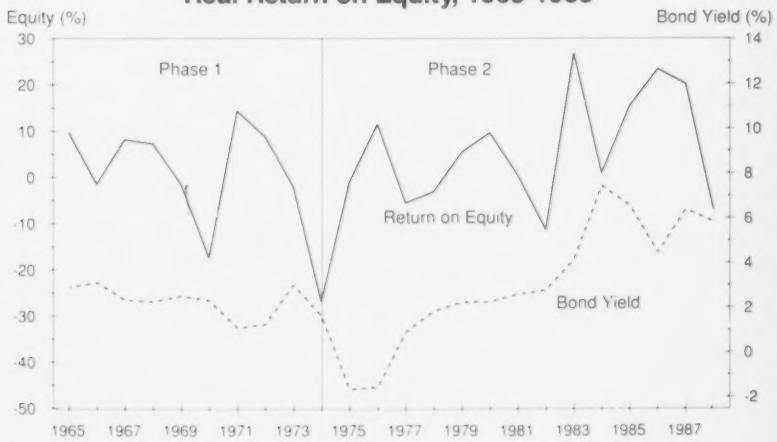
Variation in Asset Yields. In addition to loan rates and maturity changes, households may be induced to increase borrowing as a result of changes in asset yields. When the expected real yields on assets rise, households may want to borrow more in order to purchase assets, possibly even if loan rates are also high.

Figure 12 shows expected real yields on U.S. Treasury bonds and a measure of the real return on equity (defined as the dividend/price ratio plus the real change in the Standard and Poor 500 index). Yields on bonds rose from 1976 to 1978, and more sharply again after a one-year decline in 1980. Equity yields, of course, are much more variable. But within the sawtooth movements we also observe a trend rise in real yields beginning in the mid-1970s. This general rise in real yields over phase 2 may have induced greater borrowing, though this cannot be determined from these descriptive statistics alone.

Only 19 percent of all homes owned a single share of corporate equity, only 3 percent owned any bonds.

We can, in any case, reach one conclusion at this point about the impact of changing asset yields on the growth of household debt. Whatever the influence of this factor, it will certainly have been mainly the result of activity among a relatively few high-income households. According to the published results of the 1983 *Survey of Consumer Finances* (Avery and Elliehausen, 1984, 1986) ownership of nonliquid financial assets and participation in financial markets was highly concentrated: only 19 percent of all homes owned a single share of corporate equity, only 3 percent owned any bonds, 8 percent consulted a financial broker, and the top 2 percent of the income distribution owned 50 percent of all stocks and 39 percent of all bonds. Clearly, the asset purchase motivation was not relevant for the majority of households.

Figure 12
Real Yield on Treasury Bonds and Real Return on Equity, 1965-1988



Source: See Appendix A.

Necessitous Demand for Credit

As we saw earlier, real median household income grew much more slowly during phase 2 than in phase 1. The issue we raise now is whether those households experiencing stagnant or declining real incomes have increased borrowing in order to maintain their living standards as real incomes have eroded. Following Wolfson (1986), we will call this the "necessitous" demand for credit.

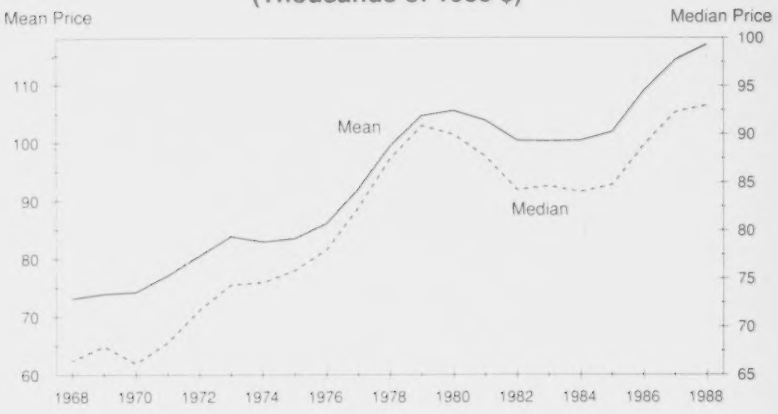
Such a response would be consistent with several other changes in the situation of U.S. households since the early 1970s. Average real wages in the U.S., as has been widely reported, have fallen sharply since the early 1970s; by 12.4 percent between 1972 and 1988. In response to this, households have made several adjustments. The most important change was the great increase in the number of married women joining the labor force. They have entered in large measure to provide their families with a second income. As a result, median family and household incomes have fallen by less than the decline in real wages. But because median income has still fallen, households have made other adjustments in order to sustain their standard of living. According to Levy and Mishel (1986), they have reduced their savings rate, postponed marriages and children, accepted smaller homes, and borrowed more from members of their nonimmediate family. The growth of financial market borrowing would be seen as one major element within this broader effort of adapting to real income declines.

Average real wages in the U.S. have fallen sharply since the early 1970s; by 12.4 percent between 1972 and 1988.

What gives additional plausibility to this argument is the behavior of home prices and housing costs generally over the post-1973 phase. While real wages and incomes have stagnated or fallen for most households during this period, real housing costs have risen sharply. This is indicated in Figure 13, which shows real mean and median prices for houses sold. With both the mean and median data, as the figures show, the sharp price upturn began in the early 1970s, peaked in 1979–80, turned down following the recession of the early 1980s, then began rising again in 1983–84 until 1988. With both series, trough prices in 1982 still remained at a level well above the peak prices of the mid-1960s.[11]

Before linking this housing price trend to any behavioral hypothesis about households, it is important to ask why house prices have risen. If price changes are due to a trend toward the purchase of higher quality homes, one could not conclude that the borrowing associated with such purchases is "necessitous." Indeed, if average housing costs are rising primarily because households are purchasing higher quality homes, this would be one indicator of an upward shift in consumption spending (even, perhaps, a consumption "binge"). On the other hand, if housing price increases represent primarily an increase in the relative price of housing—in particular, if the price of standard housing is rising faster than household income—this would be consistent with the "necessitous demand" argument.

Figure 13
Real Mean and Median Prices of Houses Sold
(Thousands of 1988 $)



Sources: Census Bureau, National Association of Realtors.
Notes: Price figures derived from weighted average of new and existing houses sold; figures for existing houses available only back to 1968.

The declining proportion of new homes sold is thus one indicator that measured price increases have been the result of true housing price inflation rather than unmeasured quality improvements.

The first point to note in this regard is that the ratio of the sales of new homes relative to existing homes has been declining since the 1970s. The percentage of new homes sold peaked in 1971 at 24.7 percent. By 1988, new homes represented only 15.8 percent of all homes sold. It is reasonable to assume that new homes would be more likely than renovated existing homes to embody significant quality improvements. The declining proportion of new homes sold is thus one indicator that measured price increases have been the result of true housing price inflation rather than unmeasured quality improvements. Indeed, the declining proportion of new homes sold suggests that, other things equal, the quality of houses sold has probably fallen.

With respect to the minority of houses sold that are new, the Census Bureau does attempt to measure the extent to which price fluctuations are due to either unmeasured quality change or true inflation. They have created a price index for new housing which estimates the sale price of homes with fixed characteristics. According to this index, most of the change in house prices over the past decade can be attributed to increases in quality rather than inflation. For example, the actual mean price of new houses rose by 64.8 percent between 1982 and 1988. According to the index, however, only 16.7 percent of that increase can be attributed to inflation. The other 47.9 percent is due to increases in what they are measuring as quality. In other words, according to this index, the quality of the mean new home rose by nearly 50 percent between 1982 and 1988.

If this finding is legitimate, it clearly carries important implications, albeit only for the new home market. However, a detailed examination of the method of constructing this index suggests that it is not an accurate indicator of changes in home quality. The same Census Bureau publication that presents the index also publishes detailed data on changes over time in a range of housing characteristics, such as size of home, number of bedrooms and bathrooms, the use of wood as an exterior wall material, and the inclusion of basements, air conditioning, and fireplaces. Examination of these data shows no dramatic improvements in house size or quality corresponding to the 50 percent improvement indicated by the index between 1982 and 1988.[12]

Rather than increases in home size and physical amenities, the changing geographical concentration of new homes sold appears to be causing the upward shift in actual new home prices recorded in the index. The housing price index includes location of homes as one of the characteristics it holds fixed. Thus, if the location of new homes sold changes over time from markets with relatively low to relatively high prices, this would raise the average price of actual homes sold, but would not raise the housing price index. Such a shift in the housing market did indeed begin in the mid-1970s, increasing during the 1980s. That is, new homes were sold increasingly in the more expensive housing markets: in urban areas (the percentage rising from 81 to 91 between 1980 and 1988); in the Northeast (from 9 to 15 percent) and in the West (from 27 to 30 percent). The proportion of houses sold in rural areas, the Midwest, and the South all declined between 1980 and 1988, areas where both mean and median prices are below the national levels.

The changing geographical concentration of new homes sold appears to be causing the upward shift in actual new home prices.

The national increase in home prices does not therefore reflect an increase in the consumption of home amenities. It is rather an indication of increasing economic disparities between regions of the country, and the need for people to locate in regions where employment opportunities—and correspondingly, the real estate market—are relatively buoyant. In other words, the evidence on housing costs lends support to the "necessitous demand" rather than a consumption shift argument.

The likely impact of these housing trends on household borrowing is evident. The most direct influence would clearly be on mortgage loans, exerting upward pressure on the ratio of mortgage debt to income. But nonmortgage borrowing may also be indirectly influenced. With a rising share of family resources channeled to financing housing costs, a smaller share of income would be available for other expenditures. This factor is especially important because housing is the least flexible item in the family budget. As Stone (1983) has pointed out, it is much more difficult to move in response to financial difficulties than to switch food stores or even change eating habits. Housing thus becomes the first claim on family income. In these circumstances, increased reliance on consumer debt may serve (if perhaps only temporarily) as an alternative to declines in living standards.

Based on this descriptive evidence, a case could be made that increased necessitous demand is exerting upward influence on the household debt/income ratio. But plainly, those households that face increased necessitous demand do not overlap with those who have increased borrowing to pursue purchases of financial assets; the necessitous borrowers, with stagnant or declining real incomes, would not normally pursue investments, nor would they be likely to take on debt to finance luxury consumption. In short, these data further suggest that different segments of the population may have separate and distinct motives for increasing their rates of debt financing. This hypothesis will have to be considered carefully with both the econometric and disaggregated data.

These data suggest that different segments of the population may have separate and distinct motives for increasing their rates of debt financing.

Summary of Descriptive Evidence

We have considered five possible explanations for the rise of the household debt/income ratio. They are:

1. Increasingly aggressive marketing by financial institutions;

2. The demographic effect of an increase in the proportion of the population in the high-borrowing age cohort as the baby-boomers age;

3. Increasingly sanguine attitudes towards debt;

4. Changes in real interest rates and expected asset yields; and

5. The growth of necessitous borrowing as median income stagnates and housing costs rise.

On the demand side of the market, the evidence is strongest on behalf of the necessitous demand argument. Some evidence also emerges consistent with a correlation between debt financing and rising asset yields. Along with this, the changing practices of financial institutions on the supply side have clearly played a role. At this stage of the analysis, it does not appear that either increasingly sanguine attitudes towards debt or demographic change have been significant demand-side influences, but we have not yet reviewed sufficient evidence to dismiss them. This is especially so since one important point that emerges from the foregoing review is that simply considering households in the aggregate is not adequate: different households may be influenced to increase debt for different reasons, so that it is necessary to break down the aggregate picture into appropriate components. In the next two sections, in which we review more formal evidence with aggregate data, as well as the analysis of the disaggregated data, these findings should be clarified further.

Econometric Analysis of Aggregate Data

I proceed in this section to discuss the basic econometric findings. The technical details as to how these findings were attained, as well as a full specification of the model and the variables employed can be found in Appendix A. Table 4 presents a nontechnical summary of the main findings. The variable to be explained is the ratio of household net borrowing to income. (See Appendix A for the difference between this and the ratio of debt to income.) The explanatory variables for the regressions were taken from the data presented in the previous section. The effect of demographic change was proxied by the demographic variable shown in Figure 10. The role of interest rate behavior was measured by a composite of the mortgage and auto loan rate shown in Figure 11. Asset yields were measured as shown in Figure 12, by the Treasury bond rate and the real yields on stock ownership—the dividend/price ratio plus the real change in the S & P 500. The squeeze between stagnant incomes and rising housing costs, finally, was represented by a proxy measure, the ratio of the housing component of the Consumer Price Index to its aggregate value[15] (an explanation as to why the CPI rather than the CPI-X1 was used here is in Appendix A). The relationship between the explanatory variables and the net borrowing/income ratio was tested in two ways: in two-variable regressions, which include only a single explanatory variable; and in multivariate regressions, where the regression equation includes two or more of the explanatory variables. Single variable equations are apt to mislead when the explanatory variable is correlated with left-out variables. Multiple regression allows the effect of a variable to be measured while holding all other relevant variables constant. By evaluating the full range of results with both types of regressions, we obtain a fuller sense of the relative strength of each of the explanatory variables. The period of time covered with all the regression equations is 1953–1988.

The results of the regression analysis can be summarized as follows:

1. The proxy for the income/home price ratio consistently shows a high degree of explanatory power in both bivariate and multivariate regressions. According to these findings, a 1 percent rise in the ratio of housing costs to income increases the net borrowing/income ratio by 0.5–0.6 percent. The performance of this variable provides strong support for the hypothesis that necessitous demand for credit by a large segment of less affluent households has exerted significant upward pressure on household borrowing and the debt/income ratio.

[There is] strong support for the hypothesis that necessitous demand for credit by a large segment of less affluent households has exerted significant upward pressure on household borrowing and the debt/income ratio.

2. The demographic variable, representing the impact of a rising proportion of householders between 25–44 years old on household borrowing, is significant in tests when it is the only explanatory variable. However, it loses significance in multiple regressions where other explanatory variables are also included and controlled for. This suggests that the impact of demographic change on the observed change in debt financing, holding other factors constant, is weak. Such a finding is consistent with the descriptive evidence shown earlier.

The impact of demographic change on the observed change in debt financing is weak.

3. The results with financial market variables are ambiguous but interesting. The variable representing equity yields appears to exert significant positive influence on borrowing behavior, with a 1 percent increase in real yields generating approximately a 0.4 percent rise in the ratio of borrowing to income. However, this result is open to question, given that the distorting impact of serial correlation is strongly affecting the regressions which include equity yields as explanatory variables.

Beyond this, when either the interest rate or bond yield variables are tested by themselves, the results suggest that neither interest rates nor bond yields exert strong influence on the borrowing/income ratio. However, when interest rates and bond yields are tested together in multivariate regressions, both emerge as significant influences in the expected direction. Borrowing/income rises by 1.0–1.3 percent for every 1 percent increase in bond yields and 1 percent decrease in interest rates. These results are not sustained with every test, so we must be cautious in making claims. But the general pattern does support this finding.

Overall, with respect to financial market variables, it appears that neither interest rates nor asset yields considered alone exert significant influence on the borrowing/income ratio. However, when considered together in a broad financial framework—a framework which allows for an investment motive linked to concurrent changes in borrowing costs and yields—yields become a consistently significant influence, as may interest rates at certain times.

To summarize, the econometric evidence with aggregate data suggests that one major demand-side influence on the debt/income ratio is necessitous credit demand. A second, though more ambiguous, influence appears to be the demand for credit to take advantage of relative movements of real interest rates and asset yields; what, in the spirit of Keynes (1936), we may call *speculative* credit demand. At best, however, these factors can explain around 85 percent of the change in debt financing patterns (i.e., the highest adjusted R^2 attained with these variables, after correcting for first-order serial correlation, is .85). One set of remaining influences which have not been formally tested here are supply-side factors. But it is also possible that, at least for some subset of households, increasing optimism does play a substantial, if difficult to quantify, role. We attempt another look at the impact of this factor in the next section, when disaggregated data are considered.

TABLE 4

Summary of Econometric Findings

Factors Influencing Net Increase in Debt/Income

	Tests with one explanatory variables	Tests with multiple explanatory variable
Necessitous credit demand (housing costs/income)	significant positive influence	significant positive influence
Demographic change	significant positive influence	insignificant
Financial Market Variables		
Rates on Mortgages and Auto Loans	insignificant	increasing and sometime significant inverse influence
Bond Yields	significant positive influence	significant positive influence
Equity Yields	significant positive influence	significant positive influence

Evidence from Disaggregated Data

Only one set of data exists through which disaggregated evidence on household debt over recent years can be obtained. These are the data contained in the "Survey of Consumer Finances" for 1970, 1977, 1983, and 1986, all conducted under the sponsorship of the Federal Reserve Board. However, several problems arise with these data, both in terms of their general reliability and their comparability between surveys. Appendix B presents a detailed discussion of these problems and the ways in which I have attempted to correct for them. There I conclude that despite the problems, much useful information may still be gathered from these surveys. Thus, to the extent possible, the data are utilized here to help evaluate the alternative explanations for the rising aggregate debt/income ratio from one more angle. The discussion proceeds in the following sequence: data on debt holdings, debt/income ratios, income growth, incomes relative to home prices, attitudes towards debt, and asset holdings. In all cases, the disaggregation is by income quintile.

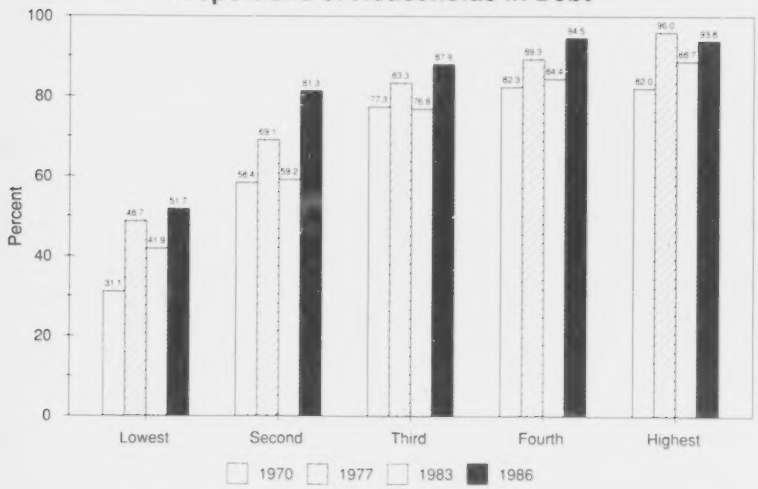
The lower 80 percent of households have become increasingly willing to take on debt over the years considered, while for the top quintile, willingness to carry debt remains basically stable at a high level.

Debt Holdings

Figure 14 presents evidence on the incidence of indebtedness (the proportion of households in each quintile who are carrying debt). To begin with, the figure shows that the incidence of indebtedness rose with income, with households in the top two income quintiles experiencing the highest proportions of indebtedness. Secondly, we see that debt incidence varies pro-cyclically. For all quintiles, the proportions in debt were higher during 1977 and 1986 than 1970 and 1983. Third, we see that, comparing cyclical highs and lows, debt incidence for the most part rose with time for all quintiles. Finally, looking at the full period—for the cyclical low in 1970 to the high in 1986—we see that the increases in debt incidence were most pronounced for the two lowest quintiles, rising from 31.1 to 51.7 percent for the lowest quintile and from 58.5 to 81.3 percent for the second.

To summarize, the lower 80 percent of households have become increasingly willing to take on debt over the years considered, while for the top quintile, willingness to carry debt remains basically stable at a high level. These figures clearly suggest that a change in the financial behavior of households in the lower 80 percent of the income distribution has occurred.

Figure 14
Proportions of Households in Debt

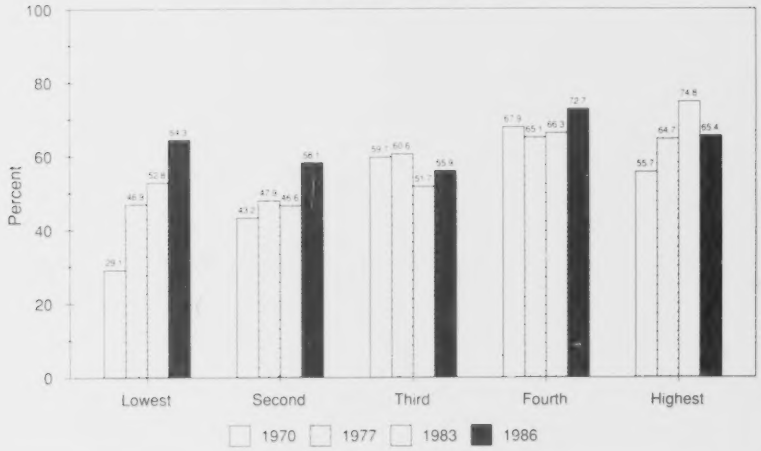


Debt/Income Ratios

Figure 15 gives data on debt/income ratios by income quintile. The first point that emerges here is that no consistent relationship holds between income levels and debt/income ratios. This observation is important because much of the literature on household debt claims that a direct relationship exists between income levels and debt/income ratios—that the debt/income ratio rises as income levels increase. It is true that such a relationship holds when considering households in the aggregate over the business cycle. That is, changes in the aggregate debt/income ratio do vary directly with cyclical fluctuations in aggregate income levels. But this aggregate relationship over the business cycle cannot be generalized. With disaggregated data, as presented in Figure 15, we see that no simple, straightforward pattern emerges in the relationship between income levels and debt/income ratios. This is true in considering both the levels of the debt/income ratios by quintile within a given year, and with changes over time in the debt/income ratio and income for the different quintiles.

No consistent relationship holds between income levels and debt/income ratios.

Figure 15
Outstanding Household Debt Relative to Household Income

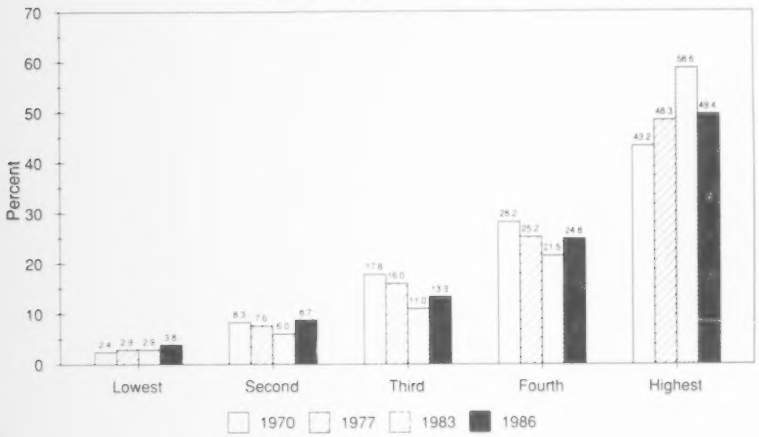


More specifically, we see that the sharpest increases in the debt/income ratio were in the lowest two quintiles, particularly the lowest quintile. The ratios for the third and fourth quintiles experienced no sustained patterns. For the top quintile, the ratio rose strongly through the period 1970–1983. For 1986 however, it fell back to its 1977 level. The decline between 1983 and 1986 was probably due in large measure to some flaws with the 1986 data set (see Appendix B). Nevertheless, the overall data are sufficiently reliable that we can draw a general conclusion: the greatest relative increases in debt/income ratios were concentrated among the poorest 40 percent of households while, for the top quintile, a sharply rising trend through 1983 had at least slowed by 1986.

The top 20 percent of U.S. households account for one-half of the aggregate debt-income level and the other 80 percent of households account for the other half of the aggregate figure.

Figure 16 reports the relative contributions of each quintile to the aggregate debt/income ratios for the four years.[14] Not surprisingly, the top quintile made the largest contribution each year, ranging between 43.2 and 58.6 percent. As we saw with the debt/income ratios themselves, there is no clear pattern to the top quintile's relative contribution. Its weight rose over the first three periods, but then fell back in 1986. Beyond this, it is notable that the contribution of the lowest quintile rose sharply between 1970 and 1986, and that the bottom two quintiles had the largest proportional upward shift between 1983 and 1986. One may generalize from this that the top 20 percent of U.S. households account for one-half of the aggregate debt-income level and the other 80 percent of households account for the other half of the aggregate figure.

Figure 16
Contributions of Quintiles to Aggregate Debt/Income Ratios



Note: Full sample figures for 1983 and 1986.

Real Income Growth

Figure 17 presents data on real income growth by quintile. To begin with, we see that real income declined between 1970 and 1983 for the lower three quintiles and stagnated for the fourth quintile. For each group, real incomes rose between 1983 and 1986. But these increases are still modest when measured over the full 1970–1986 period, especially so for the bottom quintile.

Real income declined between 1970 and 1983 for the lower three quintiles and stagnated for the fourth quintile.

The pattern for the top quintile is different, as incomes increased throughout the 1970–1986 period. The data for the top quintile, however, are not fully compatible over the four years, nor do they accord exactly with the figures for the lower four quintiles. In particular, the sharp income increases shown for the 1980s relative to the 1970s were primarily the result of changes in the data bases used (see Appendix B for details). Despite this problem with the data, we can conclude with sufficient confidence that real incomes for the top quintile, unlike the lower four quintiles, rose continuously, especially over the 1980s.

The experience of the top quintile is examined in more depth in Figure 18, which breaks down the top quintile into five equal segments. Here we see that the lower four segments of the top quintile did not experience sharp income increases in the 1980s. This finding, moreover, is not seriously distorted by any problems of comparability with the data. By contrast, the sharp income increases for the top 4 percent from 1983 to 1986 were partially the result of changes in the data base. Nevertheless, we can conclude from these overall figures that to the extent that real incomes rose

Figure 17
Real Household Incomes

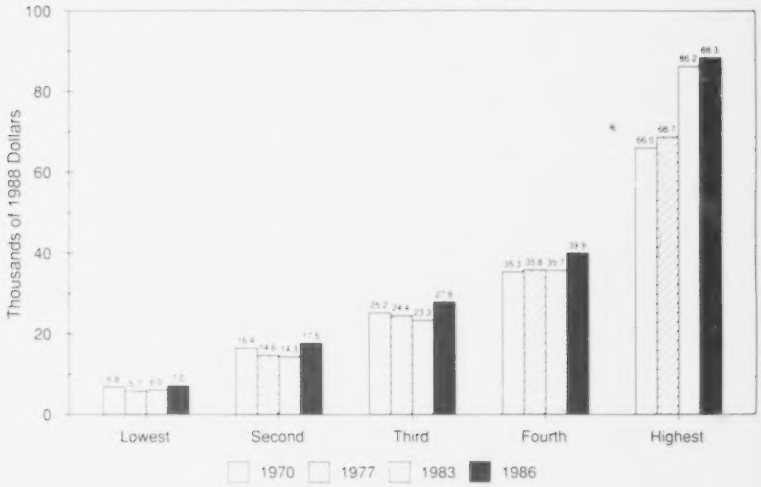
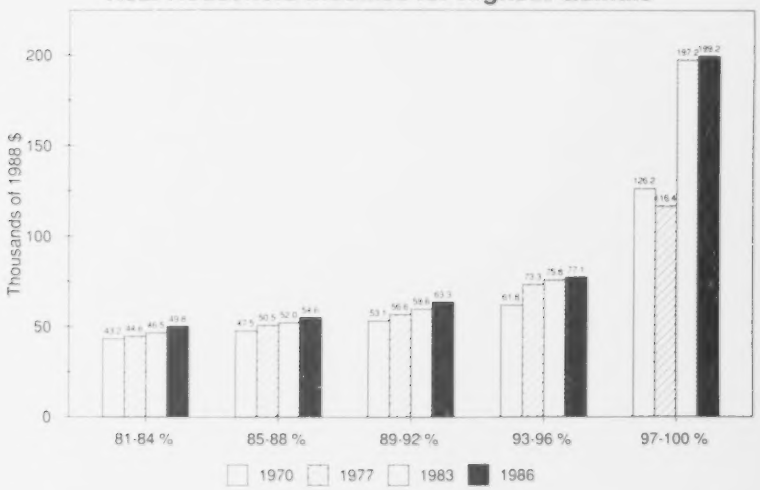


Figure 18
Real Household Incomes for Highest Quintile



for the top quintile, these increases were concentrated within the richest 4 percent of households.[15]

To summarize, we see that the lower four quintiles experienced declining or stagnant income from 1970 to 1983, and mostly modest increases between 1983 and 1986. This finding corresponds with the notion that necessitous demand for credit should have risen for these quintiles over the 1970–1986 period. At the same time, the income increases for the top quintile, and especially for the top 4 percent, were consistent with the view that these households would not have increased their borrowing to support the purchase of necessities.

The declines of income relative to housing prices were sharpest for the lower three quintiles.

Income and House Prices

Table 5 presents data on changes in housing prices relative to income. For all quintiles, the ratio of income to housing prices varied sharply on a cyclical basis. Thus, for all quintiles, the ratios for the cyclical trough years—1970 and 1983—were significantly lower than those for the cyclical peaks, 1977 and 1986. Table 5 therefore presents *rates of change* in the ratio between the two trough years and the two peak years.

The first point to observe from Table 5 is that for all quintiles, income fell relative to housing prices in the 1980s compared to the 1970s, between both the cyclical peaks and troughs. This rising gap between incomes and housing prices is consistent with the idea of rising housing prices exerting upward pressure on credit demand. Beyond this, it is important to note that the declines of income relative to housing prices were sharpest for the lower three quintiles, especially the second quintile, while the top quintile experienced the smallest relative declines between both peaks and troughs.

These patterns are also consistent with the idea that the gap between incomes and housing prices encouraged necessitous borrowing among lower income quintiles. Of course, the necessitous demand argument cannot readily explain some of the specifics of the observed pattern—why, for example, this ratio fluctuates cyclically more sharply than others or why the ratio should fall more for the second rather than the lowest quintile. But in general, these data support the idea that a growing gap between income and housing prices encouraged greater household borrowing.

TABLE 5

Rates of Change Between Peaks and Trough Years in the Ratio of Household Incomes/House Prices

	Troughs: 1970–1983	Peaks: 1977–1986
Lowest	−25.1%	−36.3%
Second	−35.3	−44.6
Third	−26.8	−30.5
Fourth	−29.8	−21.5
Highest	−19.3	−16.2

Shifting Attitudes

Three types of evidence are considered in this section. The first comes from the 1977 and 1983 sets of attitude questions, broken down by quintile. While these data cover only two years, and are at different points in the business cycle, one can still obtain an indication of how sensitive differences in attitudes are to income classes. The second type of evidence involves examining the proportion of households, broken down by quintile, that have borrowed to finance two kinds of "luxuries"—home improvements and recreation. These data should give a firmer anchor for assessing attitudes, since actual borrowing rather than simply hypothetical alternatives are being considered. Also, here there are data for all four survey years. The third type of evidence is the result of a survey question which was asked only in 1983. The question was whether households borrowed to finance purchases of luxury "savings and investment" items such as gold, jewelry, antique cars, rare books, boats, and airplanes.

Lower income households tend to be more willing to borrow to finance necessities, while upper income households are more willing to borrow to finance luxuries, durables, and investments.

Table 6 shows the results of the attitude questions broken down by quintile. The exact question posed in the survey, as shown previously in Table 2, is "What is an appropriate reason for borrowing?" Nine expenditure alternatives are then listed; all nine alternatives are stated in full in Table 2. In Table 6, I have organized the nine categories into three broad groups:

1. "Necessities", including living expenses, consolidating bills, and expenses due to illness;

2. "Durables/Investment", including car and furniture purchases and financing education; and

3. "Luxuries", including fur and jewelry purchases, vacations, hobbies, and recreation.

Table 6 reports the percentage of households responding affirmatively to each of the nine alternatives. The results are not surprising. Generally they show that lower income households tend to be more willing to borrow to finance necessities, while upper income households are more willing to borrow to finance luxuries, durables, and investments. To be more specific, lower quintile households are more willing to borrow for living expenses and consolidating bills among necessity items, though not to cover expenses from illness. With durables and investment, those in the third and fourth income quintiles are most willing to borrow in all cases, followed by the top quintile. Moreover, the range between the maximum and minimum of "yes" respondents across quintiles is greater with durables than with necessities. Only a minority within all quintiles are willing to borrow for luxury spending but in all cases the upper three quintiles show relatively greater willingness.

TABLE 6

Percentage Responding "Yes" on Whether Various Expenditure Categories Constitute a "Legitimate Reason For Borrowing," 1977 and 1983

	Necessities					
	Living Expenses		Consolidate Bills		Illness	
Quintile	1977	1983	1977	1983	1977	1983
Lowest	51	53	48	50	83	77
Second	53	49	52	52	86	80
Third	46	46	53	52	87	83
Fourth	51	44	44	47	87	83
Highest	43	43	39	44	83	85
Percentage between maximum/minimum Yes respondents per quintile	10%	10%	14%	8%	4%	8%

	Durable Investment					
	Car		Education		Furniture	
Quintile	1977	1983	1977	1983	1977	1983
Lowest	70	61	67	64	50	39
Second	87	78	80	76	63	43
Third	92	89	87	84	65	52
Fourth	93	92	88	85	68	57
Highest	78	89	78	87	51	55
Percentage between maximum/minimum Yes respondents per quintile	23%	31%	21%	23%	18%	18%

	Luxuries Investment					
	Vacation		Fur/Jewelry		Hobby/Recreation	
Quintile	1977	1983	1977	1983	1977	1983
Lowest	13	11	4	3	11	8
Second	17	10	6	3	22	11
Third	20	14	5	5	25	22
Fourth	20	14	6	5	33	25
Highest	14	16	8	7	21	30
Percentage between maximum/minimum Yes respondents per quintile	7%	6%	4%	4%	22%	19%

Only a minority within all quintiles are willing to borrow for luxury spending but in all cases the upper three quintiles show relatively greater willingness.

A couple of suggestive behavioral points emerge here. First, the relatively greater willingness of lower income households to borrow to finance necessities is consistent with the argument that increased necessitous demand for credit is a factor in the rise in household indebtedness. That is, we know that lower income groups experienced sharp real income declines between 1970 and 1983, and only barely recovered their 1970 income level by 1986. If, as indicated here, lower income quintiles tend to be more willing to borrow to finance necessities, then we would expect their borrowing to increase relative to income as their income declined.

One may also find some inferential support for the notion that increased optimism may be a factor motivating upper income households to borrow more. The highest quintile, as we see, is also relatively favorable toward financing luxury spending with debt, though not more than the third and fourth quintiles.

The data on actual borrowing to finance "luxury" spending on home improvements and recreation support the findings from the attitude questions; I therefore do not present these findings in full but only summarize the main results. Overall, there is no consistent evidence suggesting a shift toward luxury-related borrowing from the actual borrowing data. However, as with the attitude question, a minimal amount of support for this argument is evident. The supportive evidence here is that, for 1986 only, all but the top quintile increased its indebtedness to finance recreational expenditures. But the implications of this finding should not be exaggerated, since no more than 10.5 percent of households in any quintile pursued such borrowing.[16]

Luxury-type "investments" were not a major factor influencing borrowing trends for any of the income quintiles.

Table 7 shows the number of households that owed money on loans used to finance luxury "savings and investment" purchases in 1983, and the amount of their outstanding debt on such loans. The table reports results for all items included in the survey which are unambiguously luxury expenditures. As we see, the number of affirmative respondents was very small—a total of seven households in the sample of 3,651. Clearly, such luxury-type "investments" were not a major factor influencing borrowing trends for any of the income quintiles. This is important to note. If steadily rising optimism of high income households were encouraging a debt-led consumption binge for this sector, one would expect a greater number of them borrowing to explicitly support such luxury purchases.

The general assessment of these data relating to attitudes is that no body of evidence emerges to support the contention that increasing optimism exerted significant upward pressure on debt/income ratios. Certainly the single set of data supporting this claim, the data on recreational borrowing for 1986, is hardly conclusive. The general finding here is that increasing optimism, to the extent that it is a relevant influence, is confined to the upper quintiles; and even for this group the data cannot support the notion that the influence of attitude changes is highly significant. At the same time, some evidence emerges here which comports with the increased necessitous demand argument for lower income quintiles.

TABLE 7

Household Debt Associated With Luxury Savings and Investment Purchases, for 1983 in Current Dollars

Object purchased	# of households carrying debt	Mean income 1983$	Mean amount owed
Gold	0	—	—
Silver	0	—	—
Other Metals	0	—	—
Jewelry, gem stones	2	19,450	650
Antique or classic cars	2	72,757	7,600
Antiques	1	135,000	137,000
Art Objects	0	—	—
Rare books	1	70,500	4,000
Coin/stamp collections	0	—	—
Guns	0	—	—
China, figurines	0	—	—
Musical instruments	0	—	—
Oriental rugs	0	—	—
Boat	1	50,000	2,000
Camper, trailer	0	—	—
Airplane	0	—	—
Motorcycle	0	—	—

Investment-type Asset Holdings and Speculative Debt Finance

In this section we examine household investment-type nonliquid asset holdings by quintile. The aim is to consider more carefully the argument that rising speculative demand for credit by higher income households exerted significant upward pressure on the aggregate debt/income ratio. We define investment-type nonliquid assets as: real estate, mutual funds, equity, and bonds other than U.S. savings bonds. We exclude home ownership from this list since, to a major extent, it is a consumption rather than an investment good. However, in a later section, we consider asset statistics that include home ownership.

We define investment-type nonliquid assets as: real estate, mutual funds, equity, and bonds other than U.S. savings bonds.

At the outset, we must stress that the relevant data are inadequate for providing anything more than suggestive evidence on this.[17] Nevertheless, these surveys provide the best available disaggregated statistics on U.S. household asset holdings. As such, even the suggestive evidence one can draw from it should be considered seriously.

Figure 19 shows the percentage by quintile of households holding investment-type assets. Not surprisingly, investment-type asset ownership rises with income. For the bottom three quintiles, a majority of households held no assets in each of the four years surveyed. With the fourth quintile, 57 percent held assets in 1986, but for the three earlier years, less than half held any assets there as well. If we group the four bottom quintiles together, we find that 35 percent of households held assets in 1986, and 1986 was the peak year for asset holding. With the top quintile, by contrast, two-thirds of households owned a nonliquid financial asset between 1970 and 1983, and for 1986, the figure rose to 74 percent.

Wealthier households, much more than other households, tend to increase indebtedness explicitly to finance nonliquid asset purchases.

Figure 20 presents ratios of outstanding household debt relative to investment assets. For the lower two quintiles, debt constitutes a clearly rising proportion of investment assets in the 1980s compared to the 1970s. Variation of the ratio is more ambiguous for the third and fourth quintiles, but for both groups, we can see that the ratio was consistently high in the 1980s—that is, debt constituted between 90 and 140 percent of investment assets for these two groups. The situation for the highest quintile is different. To begin with, the level of debt/assets over the full period was substantially lower than that for all but the lowest quintile in the 1970s. In addition, we observe no change over time in the debt/asset ratio for the top quintile. This suggests that for high income households, increases in debt were being consistently matched by increases in investment asset ownership. This finding is consistent with the view that wealthier households, much more than other households, tend to increase indebtedness explicitly to finance nonliquid asset purchases.

Figure 19
Percentage of Households Owning Investment-Type Assets

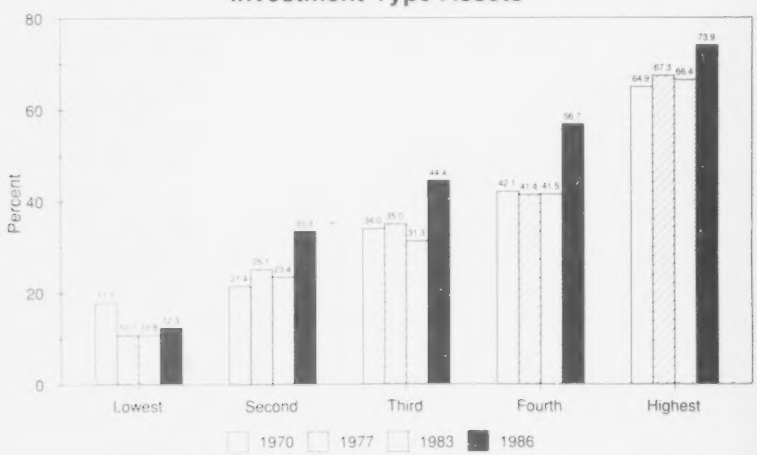
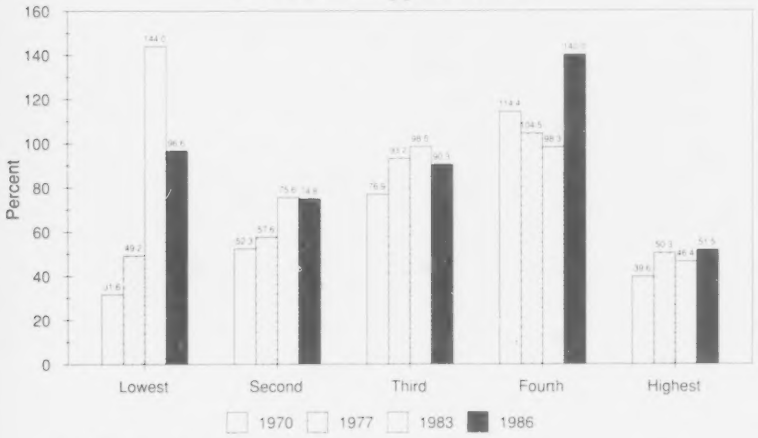


Figure 20
Outstanding Household Debt Relative to Investment-Type Assets



Note: Weighted base sample for 1983 and 1986.

In summary, the relevant information that emerges on investment assets includes the following: 1) The incidence of investment asset ownership rises with income levels; 2) The incidence of ownership remained fairly stable for all quintiles through 1983, then rose sharply in 1986 for all but the lowest quintile; and 3) Debt/asset ratios followed different patterns according to quintiles: for the lowest two quintiles, the ratio rose in the 1980s relative to the 1970s; for the third and fourth quintiles, the ratios were high and fluctuating, but did not follow a consistent pattern of change; and for the top quintile, the ratio remained fairly stable at comparatively low levels. For our purposes, the most important result here is the stable debt/asset ratio for the top quintile, suggesting that the top quintile is matching its increases in indebtedness with investment asset purchases. This pattern is consistent with the notion of a speculative demand for credit. To the extent that speculative demand is a significant factor in raising debt/income levels, these data suggest that the top quintile is primarily responsible for its influence. Given ambiguities in the data, this finding cannot be regarded as definitive. However, the data are broadly consistent with the previous results on speculative borrowing.

To the extent that speculative demand is a significant factor in raising debt/income levels, these data suggest that the top quintile is primarily responsible for its influence.

Summary of Results with Disaggregated Data

The main results presented in this section are as follows: *Debt, Income, Housing Costs,* and *Necessitous Credit Demand.* Debt incidence and debt/income ratios generally rose over the four sample years, with the largest proportional increases occurring within the lower two quintiles. For the lower quintiles, debt/income increases were associated with either declines or slow growth in real incomes, a relationship which conforms to the necessitous demand argument. For the top quintile, by contrast, both increases and the 1986 decline in debt/income were associated with increases in income. Incomes relative to house prices also fell for all quintiles in the 1980s relative to the 1970s, with the sharpest declines in the income/house price ratio concentrated in the lower three quintiles. This pattern also broadly supports the contention that increased housing costs placed a growing burden on home buyers, driving up mortgage loan demand relative to income.

The disaggregated data lend support to the previous findings that necessitous and speculative credit demand have contributed to the rise of aggregate debt/income ratios.

Shifting Attitudes. Increases in debt incidence and debt/income ratios for all quintiles make clear that some kind of attitude shift occurred after the 1970s. But the weight of evidence does not support the idea that increasingly sanguine views towards credit over time are at the root of the shift. We did observe that lower income households are more favorable toward borrowing to finance necessities, while upper income households are more favorable toward borrowing to finance luxury purchases. These factors may have influenced borrowing behavior as real incomes stagnated for lower income quintiles and rose for wealthier households.

Asset Purchases and Speculative Debt Financing. Investment asset ownership is highly skewed toward the top quintile. The top quintile was the only one in which the debt/asset ratio did not rise in correspondence with the rise of debt/income ratios. These findings are consistent with the idea that the top quintile increased its borrowing to finance asset purchases.

Overall, the disaggregated data lend support to the previous findings that necessitous and speculative credit demand have contributed to the rise of aggregate debt/income ratios, and that attitude shifts *independent* of these two factors have probably had only a minimal impact. As mentioned earlier, these results from the disaggregated data, standing alone, are insufficient to demonstrate any of these points. In combination with the previous evidence, however, they contribute to the general picture which has emerged.

Implications of the Growth of Household Debt for the U.S. Economy

Household Finance and American Living Standards

The evidence reviewed here points to the following general conclusions. To begin with, American households have become increasingly reliant on debt to finance their expenditures—that is, debt/income ratios have risen—even as the absolute level of real indebtedness has not grown at an accelerated rate. The primary causes of this change have been: greater flexibility and more aggressive marketing by financial intermediaries; the rise of necessitous credit demand by households in the lower four income quintiles; and increased speculative credit demand by upper-income quintiles. The two factors popularly cited as explanations for rising household indebtedness—increasingly sanguine attitudes towards debt and demographic change—appear to explain little to none of the observed change in household indebtedness.

The two factors popularly cited as explanations for rising household indebtedness—increasingly sanguine attitudes towards debt and demographic change—appear to explain little to none of the observed change in household indebtedness.

This broad picture of the changing financial condition of U.S. households is consistent with the evidence marshalled in previous studies—such as Mishel and Simon (1988), Harrison and Bluestone (1988), and Levy (1987)—showing that living standards for most Americans have been stagnating or declining, that the distribution of wealth and income has been worsening, and that the level of general economic security has been falling for the majority of households. This study, in a sense, can be regarded as extending the results of those previous works, focusing more on the strictly financial aspects of households' changing economic fortunes.

Given these findings, this is an appropriate place to pose questions about the broader implications for U.S. households and the economy of the patterns documented here. How burdensome for households are present levels of indebtedness? Will the rise of household borrowing be reversed, and if so, when and with what consequences? Do present levels of indebtedness present dangers for the households themselves, for the financial sector, or for the macroeconomy? Most of the discussion of household debt in professional journals and the mainstream press is concerned exclusively with these issues. They are, of course, crucial questions. Our analysis allows them to be addressed within a broader structural context in which the changing financial condition of households are one element of an economy which is increasingly debt-dependent, unequal, and unable to deliver rising living standards for the majority.

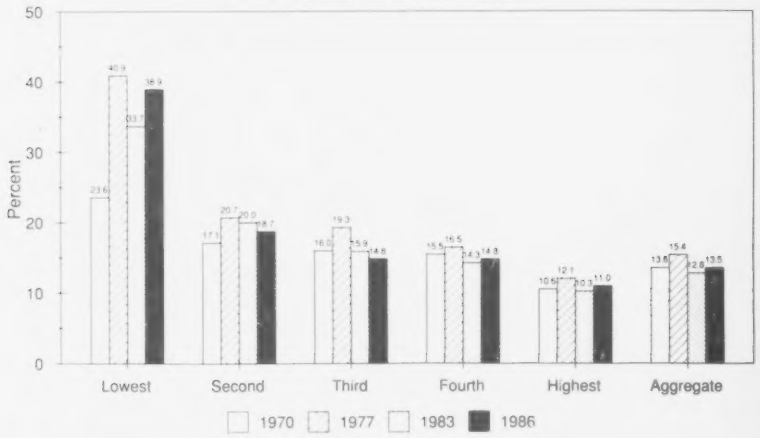
Rising Indebtedness and Financial Viability

Many analysts have argued that rising debt/income ratios do not constitute a serious threat to the financial viability of either households or the economy broadly.[18] Three arguments are most often cited to support this view. The first is that debt-servicing ratios—the ratio of amount of principal and interest payments on debt to income—have not risen as much as debt/income ratios. Thus, they contend, debt burdens have not grown. The second argument is that the growth in debt is concentrated among higher income households that have a greater capacity than lower income ones to withstand periods of financial distress. And finally, related to the second point, it is argued that the growth of household debt has been matched by equivalent increases in asset ownership, which provides households with adequate reserve funds even in periods of financial stress. I consider these points in turn.

[Debt] Servicing ratios did not increase in correspondence with the rise of debt/income ratios.

Debt-Servicing Burdens. Figure 21 presents data on debt-servicing ratios, both for the aggregate household sector and by quintile. Not surprisingly, the ratios are higher for lower income debtors, especially those in the lowest quintile, where servicing constituted about 40 percent of income in 1977 and 1986. Beyond this, we see that with both the aggregate ratios and those for the quintiles, servicing ratios did not increase in correspondence with the rise of debt/income ratios. In fact, if we compare the years of cyclical highs and lows for the 1970s and 1980s respectively, we see that servicing ratios tended to decline slightly in the 1980s relative to the 1970s. Given rising debt/income ratios, we can explain the stability of debt-servicing ratios through three related influences: the

Figure 21
Annual Household Debt Servicing Burdens Relative to Household Incomes



Note: Full sample figures for 1983 and 1986.

decline in nominal interest rates since 1982; the lengthening of maturities on consumer loans; and the proportional rise between 1983 and 1986 of longer-term maturity home mortgages relative to consumer loans. These factors have reduced the debt burdens associated with a given amount of outstanding debt.[19]

Table 8 shows standard deviations of the servicing ratios for the aggregate and by quintile. It is important to consider these figures as well as the mean servicing ratios. Generally, it would not be the average household within any quintile which experiences financial distress, but rather the relatively weaker households within each quintile. Standard deviations of the servicing ratios indicate whether there has been an increasing proportion of households carrying both higher and lower than mean servicing burdens. A rising standard deviation suggests an increase in relatively weaker as well as relatively stronger households.

We see in Table 8 that standard deviations rose throughout the four sample years. In 1986, the figure jumped by two orders of magnitude. This is due to three "outlier" households in the lowest quintile that are carrying heavy debt burdens but earned no income. The presence of such households may be only a one-time statistical aberration. But it could signify that a small but potentially dangerous pocket of heavily indebted and severely overburdened households has emerged.

Even after eliminating the outliers, we still see that standard deviations of servicing burdens rose for all quintiles through 1983, especially for the lowest quintile. The absence of any further standard deviation increased in 1986—again, after eliminating outliers—should be weighed in light of the problems of comparability when using the 1986 set of data (Appendix B). Generally, the standard deviation data do suggest an increase of households with high (as well as low) servicing burdens, especially within the lower quintiles, and thus in the number of households experiencing worsening financial stress.

[There has been] an increase in households with high (as well as low) servicing burdens, especially within the lower quintiles, and thus in the number of households experiencing worsening financial stress.

TABLE 8

Standard Deviations of Debt-Servicing Ratios

	1970	1977	1983	1986 with outliers	1986 no outliers
Aggregate Sample	.117	.289	.468	58.1	.209
Quintiles					
Lowest	.230	.837	1.45	188.3	.518
Second	.121	.150	.161	.154	.154
Third	.098	.124	.127	.103	.103
Fourth	.086	.090	.095	.132	.132
Highest	.068	.077	.100	.085	.085

Debt and Income. Many of the data presented thus far address the question of whether richer households are responsible for most of the growth of debt/income ratios. It is true, to begin with, that the top quintile holds approximately 50 percent of total outstanding debt and thus determines about half of the aggregate debt/income ratio (see Figure 16). This quintile, as we have seen, experienced rising real incomes throughout the survey years. We have also seen that servicing ratios for debtors in the top quintile were the lowest of any quintile, ranging between 10.3 percent and 12.1 percent of income over the four survey years. Standard deviations of servicing ratios were also lowest for the top quintile for all survey years, even though those standard deviations nearly doubled between 1970 and 1986. In short, insofar as we can identify aggregate household debt trends with the situation of the top income quintile, it does appear that these trends suggest little immediate threat to the financial viability of those households or the economy.

Signs of financial stress are present among the lower 80 percent of the income distribution, increasingly so at lower income levels.

This is much less evident, however, when one considers less well-off households. The lower 80 percent of households accounted for roughly half the outstanding debt and variation in the aggregate debt/income ratio. For these households, unlike those in the top quintile, debt/income ratios rose amidst declining or only slowly growing real incomes. And while these households had stable mean-servicing ratios, the level of the servicing ratios rose as income levels declined, to as much as 40 percent for the lowest quintile. Moreover, standard deviations for the lower four quintiles were higher than for the top quintile. Thus, signs of financial stress are present among the lower 80 percent of the income distribution, increasingly so at lower income levels. This finding contradicts the benign view which one attains by limiting the analysis to high income households.

Debt and Assets. Two questions are raised by the argument that debt increases are being matched by increases in assets. The first is empirical: has asset growth actually kept up with debt increases? The second is analytic: do assets necessarily represent a solid base of reserve funds during periods of economic stress?

A partial answer to the empirical question was provided in Figure 4, which presented aggregate figures derived from the Flow of Funds Accounts for household debt/total assets and debt/financial assets. We saw that, beginning in 1965, both ratios rose through the mid-1970s, experienced only cyclical fluctuations through the early 1980s, then began rising again through 1988. Peak figures over this period for both ratios were reached in 1988: the debt/asset ratio at 17.3 percent and the debt/financial asset ratio at 26.5 percent. Thus considering these aggregate figures, it is not the case that asset growth has kept pace with debt growth.

It is true that the debt/asset ratios generated from the surveys present a different result. According to these, when we measure debt relative to total assets—not simply investment-type assets as shown in Figure 22—the ratio for all households remained remarkably stable at around 20 percent

between 1970, 1983, and 1986. Within quintiles as well, there were few significant changes over time in the ratios.

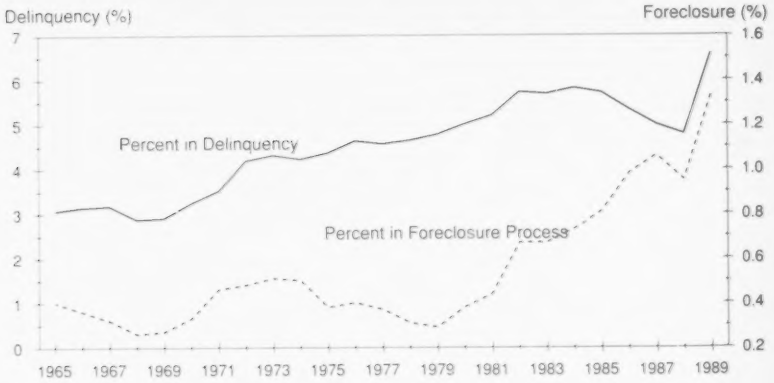
Thus, we are faced with contradictory evidence on the growth of debt relative to assets. However, given the much smaller coverage of the Surveys as well as the problems of reliability discussed in Appendix B, we would have to regard the Flow of Funds data as providing a more reliable aggregate picture than the four samples. This implies that, at the least, one should begin from the presumption that asset growth has probably lagged behind debt growth. Certainly, the frequent unqualified assertions in the literature (e.g., Friedman 1986, 1988) that asset growth has matched debt growth cannot be supported by the evidence.

Frequent unqualified assertions in the literature that asset growth has matched debt growth cannot be supported by the evidence.

In any case, determining whether the relative growth of households' debts and assets constitutes a danger to financial markets or the macroeconomy cannot be answered by appeals to the figures alone. We must rather address this matter in terms of the second question raised above—the analytic question of how to value assets for the purpose of assessing financial viability. The basic issue here is that many types of assets are subject to rapid revaluation as economic circumstances shift: the October 1987 stock market crash was the most recent and dramatic reminder of this fact. During economic downturns, asset holdings will generally fall in value, especially if widespread attempts are made to liquidate assets to meet debt-servicing commitments. At the same time, debt obligations are fixed in monetary terms and, to the extent that downturns involve disinflation, rise in real terms. For promoting financial stability, it is of course preferable that asset growth accompany, rather than lag behind, debt increases. But because economic downturns tend to force asset values downward without lowering debt commitments, asset growth cannot provide a secure cushion to creditors when the incomes of debtors falter.

Debt and Financial Stability. The foregoing discussion of servicing ratios and of the relationship between debt, income, and assets can serve as a foundation for examining the broader implications of the rise of debt/income ratios. To begin with, it is evident that lower income households, and especially those in the bottom quintile, are experiencing serious and worsening financial pressures. Debt/income ratios have risen sharply in the 1980s for the lowest two quintiles, as incomes have declined or stagnated. And while mean debt-servicing ratios were basically stable throughout the four sample years, the ratios were again very high, especially for the lowest quintile. Moreover, standard deviations for servicing ratios were generally highest among the lower quintiles. Finally, the bottom quintile was least able to match debt increases with increased asset holdings. These households, in short, have become increasingly burdened with debt amidst a decline in their overall economic circumstances.

Figure 22
Percent of Mortgage Loans in Delinquency and in Foreclosure Process, 1965-89



Source: Mortgage Bankers Association.
Note: Data are for fourth quarters, except that delinquencies in 1974 and both figures in 1989 are taken from 1975 I and 1989 III, respectively.

Since 1980, when the proportion of foreclosures was 0.4 percent of all loans, the figure has been rising sharply, peaking in 1989 at 1.3 percent.

More direct measures of household financial stress emerge from considering the data on loan delinquencies and foreclosures and personal bankruptcies. Mortgage loan delinquencies and foreclosures are presented in Figure 22. From these figures, it appears that households' capacity to service debt has indeed diminished. The delinquency rate has been rising since the late 1960s. This increase was continuous from 1969, when the ratio was at 2.9 percent, to 1984, when it reached 5.8 percent, doubling the 1969 rate of delinquencies. Between 1985 and 1988, the figure declined, but then in 1989 (third quarter), reached a new peak of 6.6 percent. The series on mortgages in the foreclosure process behaves somewhat differently. This series did not show any trend until 1980. Since 1980, when the proportion of foreclosures was 0.4 percent of all loans, the figure has been rising sharply, also peaking in 1989, at 1.3 percent.

With consumer loans, we have data only on delinquency rates, and only back to 1975. From 1975 to the present, no clear pattern other than cyclical fluctuation emerges. These fluctuations are also at a level significantly below that for mortgage loans, ranging between 2.1 to 2.9 percent. It is not apparent why consumer loan delinquencies should follow a different path than that of mortgage loans, especially given that, until very recently, both types of debt had grown fairly equally relative to household incomes. A possible contributing factor is that the servicing burdens on consumer loans will generally weigh less heavily on family budgets than mortgage payments. Personal bankruptcies have followed an upward trend similar to that of mortgage foreclosures and to the debt/income ratio itself. A recent study of this phenomenon (Luckett, 1988) argued that the single most

important factor explaining this has been the rise of the debt/income ratio, especially since 1984, as bankruptcies rose in an uncharacteristic countercyclical pattern. The article also reports that bankruptcy is experienced mainly by lower-income households, a finding which is consistent with the evidence presented here that the rise of debt/income ratios and standard deviations of debt-servicing burdens have been sharpest among low income households.

How have these indicators of increasing household financial stress affected the creditors' side of financial markets? Generally speaking, increases in household debt-servicing problems mean that the portfolios of financial institutions lending to households will become more risky, if not necessarily less profitable.[20] In measuring the extent of this effect, we again face a statistical problem in that it is difficult to isolate the impact of rising mortgage delinquencies, foreclosures and personal bankruptcies on the balance sheets of intermediaries. This is partly because most intermediaries now lend in a wide range of markets, so that their overall portfolios are affected by the conditions of economic sectors other than households. In addition, because of the period since the mid-1960s of rising nominal interest rates, financial innovation, and deregulation, intermediaries have encountered a changing environment which has affected their balance sheets in ways independent of the effects of households' servicing problems. This is especially true for savings and loans, the institutions most closely tied to the household mortgage market. They have been battered in recent years because they were holding long-term loans incurred while rates were low while they were also paying the prevailing high nominal rates to short-term depositors.

Increases in household debt-servicing problems mean that the portfolios of financial institutions lending to households will become more risky, if not necessarily less profitable.

Despite the difficulties inherent in analyzing the impact of household debt problems on financial institutions, two points can nevertheless be established from the available evidence: first, as the widely reported figures on rising bank failures and the collapse of the savings and loan industry make clear, intermediaries have experienced deterioration of their portfolios in recent years; and, second, that the financial condition of the household sector has not helped the situation.

Broadening the picture to the macroeconomy, some general points can be suggested here as well. One concerns the issue of "crowding out," the idea that federal government deficits are absorbing so large a proportion of the available loanable funds that they inhibit private sector borrowing. Despite the unprecedented levels of federal deficits, households have not been crowded out of financial markets. Rather, innovative and internationally integrated financial markets have succeeded in accommodating the concurrent increases in federal government and household credit demands (as well as those of the nonfinancial business sector). To a large extent, the cost of accommodation has been unprecedented levels of real interest rates. But even high interest rates, as we have seen, have done little to dampen household debt growth in recent years.

A second macroeconomic implication of household debt trends concerns business cycles. During a cyclical downturn, significant reductions in credit extensions are likely to result. They would occur both as households experience a declining ability to carry more debt and as intermediaries—already experiencing increasing stress during the current expansion—seek to reduce their exposure to faltering debtors. When the downturn commences, a sharp decline in household purchasing power—sharper than would otherwise occur in a downturn—would then have to follow, since household spending has become increasingly debt-dependent.

The next downturn will likely be more severe than it would have been if the purchasing power of households was less dependent on debt.

In assessing the current situation, several commentators have suggested that a break in the household debt market is likely to be the immediate detonator of the next cyclical downturn. In fact, such specific predictions can never be established from observed data. Moreover, even if accurate predictions of this nature could be made, the knowledge obtained would be relatively trivial. Far more important for understanding our current macroeconomic situation is to recognize that the next downturn—whatever its immediate cause—will likely be more severe than it would have been if the purchasing power of households was less dependent on debt.

In terms of policy, the most important single lesson to be gained from the foregoing is clear: policy efforts to achieve macroeconomic stability will need to take greater account of the structural problems associated with the rise of household indebtedness, especially the rise of necessitous and speculative credit demand. If attention is not paid to these problems, we can anticipate further increases in the severity of macroeconomic instability with time.

How should policy respond? This is a question beyond the scope of this study. But what emerges clearly is that the current and potential difficulties of the financial sector and macroeconomy are closely intertwined with the most basic problems facing the household sector—increasing inequality, stagnating real incomes, and rising housing costs for the majority, speculative financial activity by the wealthy, and rising debt dependency as an instrument to sustain these unacceptable trends.

Appendix A. Formal Specifications of Variables and Econometric Model

The purpose of this appendix is to report fully on the econometric analysis summarized in the main text as well as develop in greater depth three issues mentioned in the text:

1) the behavior of the debt/income ratio in the earlier post-war years, between 1950 and 1965; 2) the formal relationship between the outstanding debt/income ratio and net borrowing/income, what we are calling the debt financing ratio; and 3) the specification of the variables in the econometric model, in particular the demographic variable. All of these issues are closely associated with the formulation of the econometric model, and thus will be considered first. I will also present full specifications and data sources for the variables presented in the model. The discussion in this appendix is based on Pollin (1988), though the data are updated and the variable for equity yields has been respecified.

A Formal Accounting Framework

As Figure 23 shows, the debt/income ratio rose continuously between 1950 and 1960, and the overall rate of increase (as indicated by the slope of the curve) was stronger than the uptrend since 1975 (the focus of discussion in the text). An illuminating model for explaining this earlier ascent was developed by Enthoven (1957, 1964). This model also establishes the formal relationship between the debt/income and net borrowing/income ratios.

Figure 23
Outstanding Household Debt Relative to Disposable Personal Income, 1950-88

Source: Federal Reserve

Enthoven's specific purpose was to explain the sharp rise of the observed outstanding debt/income (D/Y) ratio in the early post-war years. The model showed how an asymptotically increasing D/Y could be generated from an initial base period through a set of stable relationships in the household accounts. Enthoven assumes two stable relationships in his model. The first is that nominal income Y experiences stable growth, i.e.

$$Y_t = Y_0(1+g)^t \tag{A.1}$$

in which **g**, the growth rate of nominal income **Y**, is assumed to be constant and t is the number of years that have elapsed since the base year Y_0. The second stable relationship is that, beginning at a base of zero debt, the net increase in debt—the rate of net borrowing—will remain as a fixed proportion of income over time.

$$D_t - D_{t-1} = V_t = Y_t \tag{A.2}$$

Enthoven showed that equations (1.1) and (1.2) imply

$$D_t = [a(1+g)/g]Y_0[(1+g)^t - 1] + D_0 \tag{A.3}$$

$$D_t/Y_t = a(1+g)/g - [a(1+g)/g - D_0/Y_0](1+g)^{-t} \tag{A.4}$$

Thus in the limit, equation (1.4) becomes

$$\lim_{t \to \infty} D_t/Y_t = a(1+g)/g. \tag{A.5}$$

Equation (A.5) thus makes clear the formal relationship between debt/income (D/Y) and debt financing **a** in a mature economy. However, Enthoven offered no behavioral explanation as to why **g** or **a** should be stable variables. His model therefore can only be useful in providing a growth accounting framework, rather than substantive hypotheses, for the behavior of D/Y.

In applying the model for growth accounting purposes, we can, to begin with, accept Enthoven's assumption that households carry no debt in the base year as a reasonable reflection of actual post-war conditions. During the 1930s Depression, a considerable share of outstanding household debt was eliminated through defaults and little new debt was accumulated because of the low wage and expenditure levels and the weak financial structure. Then, during World War II, restrictions were placed on household borrowing and spending while the federal government accumulated its huge war debt. As a result, households carried relatively little debt into the post-war period, the D/Y ratio for 1947 being a historically low 27.9 percent.

Beyond this, in utilizing the Enthoven model it is necessary to consider the behavior of the variables **a** and **g**. Because of this study's concern with explaining long-term behavior, the *cycle-to-cycle* rather than annual movements of **a** and **g** are shown in Table 8.[21] Here we see, first of all, the **a** is essentially stable throughout the first four post-war cycles, remaining between 5.8 and 5.9 percent, except for the drop to 5.0 percent during the brief cycle 2. This basically conforms to Enthoven's assumptions, and can thus help explain the asymptotically stable pattern of D/Y through cycle 4. By contrast, **g** moves little between cycles one and two, but thereafter, primarily as a consequence of the sustained inflation that first emerged in the 1960s, rises until cycle 5. Of course, this upward trend of **g** exerts downward pressure on D/Y, an effect which is reflected in the small declines of D/Y in the mid-1960s relative to its asymptotic path. Nevertheless, the basic cycle-to-cycle stability of **a** and **g** from the 1950s to mid-1960s does provide an explanation for the asymptotic behavior of the ratio over this period.

Focusing on the behavior of **a** and **g** also provides a formal framework for explaining the uptrend in D/Y beginning in the 1970s; in the process, the relationship between **a** and D/Y also becomes clearer. Table 9 shows that after cycle 4, **a** departs sharply from its stable level over the first four cycles. It rises to 8.3 percent in cycle 5 then, while declining in cycle 6, still remains at 7.9 percent, a figure substantially above the levels experienced over the first four cycles. In short, within the Enthoven growth accounting framework, this upward ratcheting of **a** is the primary explanation for the rise of D/Y over cycles 5 and 6. (A subsidiary explanation for cycle 6 only is that **g** falls in cycle 6 relative to cycle 5, but only to a still historically high 7.8 percent.) Thus to provide a substantive explanation for the upward shift in D/Y in cycles 5 and 6 away from the asymptotically stable path of the previous four cycles, what needs to be explained is the rise of **a**—the rate of debt financing—since the early 1970s.

TABLE 9

Cycle Averages for the Rate of Household Debt Financing (a) and Nominal Disposable Household Income Growth (g) (Percentages)

	1953-57 (1)	1957-59 (2)	1960-68 (3)	1969-72 (4)	1973-79 (5)	1980-88 (6)
Net borrowing/ disposable income, (a)	5.8 (1.2)	5.0 (1.6)	5.8 (1.0)	5.9 (2.2)	8.3 (2.4)	7.9 (2.2)
Nominal disposable income growth, (g)	5.2 (2.2)	4.8 (1.3)	6.2 (1.7)	7.7 (0.6)	11.0 (2.0)	7.8 (1.9)

Sources: See Appendix A text.
Note: Figures in parentheses are standard deviations.

Specification of Behavioral Hypotheses

The behavioral hypotheses considered in the main text to explain the rise of D/Y and **a** are: 1) a greater willingness by households to incur debt because of the optimism bred through the relative prosperity of the post-World War II period; 2) a declining real cost of credit for both mortgage and consumer loans, in absolute terms and relative to the expected yields on assets; 3) an increasing proportion of households moving into the high demand phase of their financial life cycle; and 4) the rise of households' necessitous demand for credit as real median incomes have fallen and housing prices have risen since the mid-1970s.

The increasing optimism argument is not formally specified and included in the regression equations. The other variables are specified as follows:

Demographic Change. To consider formally the extent to which the demographic trends described in the text have affected **a**, we define the variable DEM. DEM gives a population-weighted mean D/Y ratio for all households. More specifically:

$$DEM_t = X24_t\,(Z24) + X34_t\,(Z34) + X44_t\,(Z44) + X54_t\,(Z54) + X64_t\,(Z64) + X65_t\,(Z65) \qquad (A.6)$$

in which XA_t = the proportion of householders in year t between the ages A and (A-9), for A = 24, 34, 44, and 54; and $X65_t$ = the proportion of householders > 65 years old; ZA = the mean D/Y ratio from the combined data for 1970, 1977, and 1983 for householders between ages A and (A-9), for A = 24, 34, 44 and 54; and Z65 = the mean D/Y ratio for 1970, 1977 and 1983 for householders > 65 years old.

This series is shown in Figure 10 in the text.

Variations in Real Credit Costs and Financial Asset Yields. Because of inflation, the real cost of credit can fall below the nominal cost through two effects. First, even though inflation encourages rising nominal interest rates, it lowers the real rate of interest if nominal interest rates rise more slowly than the expected inflation rate. These relative movements can be measured through the equation

$$r_{loan} = i_{loan} - \mathbf{P}, \qquad (A.7)$$

where r_{loan} is the real cost of credit, i_{loan} is the nominal interest rate and **P** is the expected rate of inflation. In addition, with nominal interest rates rising, tax deductions from interest payments will also rise, even though only a portion of the nominal interest represents a real payment burden.

The additional tax effect can be incorporated into the real cost equation, giving

$$c_{loan} = i_{loan}(1\text{-}\mathbf{w}) - \mathbf{p} \qquad \text{(A.8)}$$

where **w** is the tax rate on individual income.

Unfortunately, no satisfactory method exists for accurately measuring **w**, whose value should reflect the average individual *statutory* tax rate for a given year. Standard practice involves utilizing alternative values for **w** in separate calculations of c_{loan}. But this procedure does not recognize variation in **w** over time, and clearly, **w** does vary—for example, as a result of "bracket creep" in the 1970s and the tax reductions of 1981. Because of this difficulty, both r_{loan} and c_{loan} are utilized in the regression analysis as alternative imperfect measures of real credit costs.

In addition to the influence of credit costs, we consider the willingness of households to undertake debt financing in order to benefit from expected changes in real yields of assets relative to the cost of funds. If expected yields are rising, households may be induced to increase their rate of debt financing to purchase them, especially if real borrowing costs are also expected to fall. To measure this influence, the variables that represent real yields on bonds (r_{bond}) and equity (r_{eq}) in Figure 13 in the main text to are also included in the regression analysis.

The Growth of Necessitous Debt Financing. To measure this variable for the regression analysis, we cannot specify the housing cost/income relationship directly, because income is also in the denominator of the dependent variable **a**. An acceptable proxy is the ratio of the housing component of the Consumer Price Index to the aggregate CPI,

$$\mathbf{H} = \text{housing CPI/aggregate CPI.} \qquad \text{(A.9)}$$

We use the CPI here rather than the CPI-X1 for three reasons: we specifically want to capture investment as well as consumption aspects of housing costs; a specific housing component series of the CPI-X1 has not been generated; and the aggregate CPI-X1 has been calculated only back to 1967. As for the relationship between **H** and the ratio of median home prices to income, the correlation coefficient between them is .83 between 1968 and 1988, the only years for which the housing data on existing homes are available. After controlling for cyclical change, the correlation coefficient rises to .93.

Regression Results

The set of causal variables can thus be specified as

$$a = f(H, r_{loan}[c_{loan}], r_{bond}, r_{eq}, DEM), \tag{A.10}$$

where we anticipate $\partial a/\partial H > 0$; $\partial a/\partial r_{loan}[c_{loan}] < 0$; $\partial a/\partial r_{bond} > 0$; $\partial a/\partial r_{eq} > 0$; and $\partial a/\partial DEM > 0$.

Because we want to explain the trend movement in **a**, it is necessary to decycle the variables. We decycle following the additive decomposition procedure, after standardizing the variables to allow for the cyclical component to be directly subtracted (a standard textbook reference on decomposition techniques in time series analysis is Makridakis and Wheelwright, 1983). Each decycled variable is thus expressed as:

$$x^{\wedge} = [(x-\bar{x})/\varpi_x] - [(C-\bar{C})/\varpi_c] \tag{A.11}$$

in which $x^{\wedge}$ is the decycled specification of x, C is the measure of cyclical variation, the bar superscript indicates the mean and ϖ the standard deviation of a variable.

This decycling procedure was employed because it is a relatively powerful means of separating cyclical from trend influences. Other decycling techniques were also pursued, including regressing **a** on **C** in a bivariate regression, to generate a decycled residualized dependent variable for **a**; and simply including C as an independent variable in multivariate regressions. With the residualized dependent variable, the results essentially resembled those reported here, except that the degree of significance and explained variation diminished. Regressions which simply include **C** as an independent variable in multivariate regressions did not generate statistically significant or substantively meaningful results, as the results continued to strongly reflect cyclical influences.

The regression results, shown in Table 10, can be summarized as follows:[22]

1. The variable $H^{\wedge}$ clearly exerts strong positive influence on $a^{\wedge}$. This is shown, to begin with, in the bivariate regression 1, in which the $H^{\wedge}$ coefficient is .51, the T-value is 4.49 and $\bar{R}^2$ is .73. In the multivariate regressions 7-9 and 11, the coefficient value for $H^{\wedge}$ rises to between .60-.70, and the $\bar{R}^2$ values remain at about .73. The T-values fall somewhat, but are still well within the region of statistical significance. Regression 10, which includes $r^{\wedge}_{eq}$ as an independent variable, is the only specification in which $H^{\wedge}$ is insignificant. But this result is highly influenced by serial correlation. Even after employing the AR(1) control technique, the D-W statistic was 1.37, which falls in the region of indeterminacy. We return to this result below.

TABLE 10

Regression Results
Dependent Variable is a^s
Sample 1953-1988

Independent Variables Summary Statistics	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.02	0.01	-0.02	0.46	0.45	0.38	0.06	0.07
(0.06)	(0.03)	(-0.04)	(2.59)	(0.56)	(0.56)	(0.18)	(0.23)	
H^s	0.51	—	—	—	—	—	0.60	0.64
	(4.49)						(3.74)	(4.17)
r^s_{loan}	—	0.37	—	—	—	—	0.17	—
		(1.90)					(-0.75)	
C^s_{loan}	—	—	0.39	—	—	—	—	-0.25
			(2.02)					(-1.09)
r^s_{bond}	—	—	—	0.46	—	—	—	—
				(2.59)				
r^s_{eq}	—	—	—	—	0.41	—	—	—
					(7.27)			
DEM^s	—	—	—	—	—	0.48	—	—
						(3.71)		
Rho	0.61	0.71	0.74	0.65	0.87	0.81	0.62	0.59
(4.41)	(5.74)	(6.25)	(5.35)	(10.41)	(8.67)	(4.44)	(4.14)	
D-W	1.55	1.71	1.70	1.72	1.44	1.67	1.54	1.56
$\bar{R}^2$	0.73	0.62	0.63	0.65	0.83	0.71	0.73	0.73

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Constant	0.08	0.36	-0.03	0.60	-0.07	-0.02	0.10	0.06
(0.23)	(0.50)	(0.19)	(0.74)	(-0.16)	(-0.05)	(0.32)	(0.23)	
H^s	0.66	0.07	0.67	—	—	—	0.64	0.60
	(3.27)	(0.59)	(3.43)				(3.42)	(2.88)
r^s_{loan}	—	—	—	-1.03	-0.82	—	-0.70	—
				(-2.80)	(-1.38)		(-1.25)	
C^s_{loan}	—	—	—	—	—	-0.95	—	-0.40
						(-1.42)		(0.70)
r^s_{bond}	-0.24	—	—	0.99	1.20	1.34	0.42	0.17
	(-1.43)			(2.76)	(2.12)	(2.24)	(0.72)	(0.28)
r^s_{eq}	—	0.38	—	0.41	—	—	—	—
		(5.13)		(7.43)				
DEM^s	—	—	-0.19	—	—	—	—	—
			(-0.80)					
Rho	0.61	0.87	0.54	0.88	0.68	0.58	0.62	0.58
	(4.38)	(9.56)	(3.20)	(11.68)	(5.33)		(4.66)	(3.87)
D-W	1.52	1.37	1.53	1.73	1.78	1.80	1.76	1.59
$\bar{R}^2$	0.73	0.83	0.73	0.86	0.66	0.65	0.73	0.72

Note: Method of estimation is OLS with correction for first-order serial correlation, Figures in parentheses are T-statistics.
Sources: See notes at end of this Appendix

2. The findings concerning real credit costs and yields—the variables $r^{s}loan$, c^{s}_{loan}, r^{s}_{bond} and r^{s}_{eq}—need to be evaluated carefully. We need to consider separately bivariate regressions, multivariate regressions with H^{s} and one yield or cost variable, and multivariate tests with two or more yield/cost variables.

Bivariate regressions 2 and 3, involving r^{s}_{loan} or c^{s}_{loan}, generate t-statistics which are on the margin of significance. More importantly, both show positive coefficient signs, which is contrary to theory. What is suggested here is that most of the explained variation is captured by the AR(1) variable. In regressions 7 and 8, multivariate tests with H^{s}, the coefficient signs are now negative, consistent with theory, but the t-statistics are far below the significance threshold. In short, we thus far have no evidence that real credit costs are influencing change in a^{s}.

The yield variables, r^{s}_{bond} and r^{s}_{eq}, generate the following results. In bivariate regressions 4 and 5, both carry the appropriate signs and their t-statistics are significant. But the results of these regressions are similar to those of 2 and 3. This suggests that, as with those previous tests, a high proportion of the explained variation is deriving from the AR(1) term.

Regressions 9 and 10 include H^{s} along with the yield terms as independent variables. In 9, r^{s}_{bond} carries a negative coefficient value, contrary to theory. Regression 10, as noted above, is heavily influenced by serial correlation. Given that we already control for cyclical change in all variables, such strong serial correlation is probably associated with the prolonged influence of long-term shifts between bull and bear conditions in the stock market. The findings for regression 10 are therefore not reliable. Nevertheless, it is worth noting that r^{s}_{eq} is highly significant and with the theoretically anticipated positive sign, provides some evidence that equity yields do influence borrowing in the expected direction—i.e., borrowing rises as yields rise.

Regressions 12 to 14 provide the most interesting results involving both the credit cost and yield variables. In 12, to begin with, $r^{s}loan$, r^{s}_{bond} and r^{s}_{eq} are all significant and with the correct signs. Moreover, the coefficient values for r^{s}_{loan} and r^{s}_{bond} are both around unity. This specification is still heavily affected by serial correlation, but, as indicated by the D-W statistic (though not the rho value), somewhat less than the other equations which include r^{s}_{eq}.

In 13 and 14, we drop r^{s}_{eq} to reduce the degree of serial correlation. We obtain roughly the same results for the remaining cost and yield variables. The only major difference is that the t-statistic for the cost variables falls to around 1.4, falling in the region of insignificance. But these figures are still much higher than those obtained in both bivariate and multivariate specifications which exclude yield variables.

The above pattern is not sustained in regressions 15 and 16, when H^s is included in multivariate tests with r^s_{loan}, c^s_{loan} and r^s_{bond} (tests with r^s_{eq} followed the pattern of 12). Nevertheless, even given the problem of serial correlation associated with r^s_{eq}, the results from 12 to 14 carry a substantive message. They suggest that credit costs and yields do influence household borrowing, though only under restricted conditions. The most important condition is that a broader financial market should be specified, not just variations in either yields or credit costs alone. The exception here was the highly significant result for r^s_{eq} in regressions 5 and 10, but again, these equations were heavily influenced by serial correlation. The second condition, again with the exception of the regressions including r^s_{eq}, is that H^s be excluded from the regression equation. These conditions imply that speculative credit demand does exert influence on household borrowing, but it appears to be a somewhat less powerful effect than necessitous demand.

3. DEM^s does not exert positive influence on a^s. In regression 6, a bivariate regression, DEM^s is positive with a t-value of 3.71. But this is not a robust result. To begin with, this regression is dominated by autoregressive influences—rho is .81 and its t-value is 8.67. In addition, DEM^s is statistically insignificant in regression 11, a multivariate regression with H^s, and its sign reverses to negative.

To summarize then, the regression results indicate that the major demand-side influence on the trend variation in **a** is the rise in housing costs concurrent with the stagnation in real median incomes since the mid-1970s. A second, and somewhat less clear-cut influence, is the attraction of using borrowed funds to purchase stocks and bonds, especially when expected borrowing costs for households are falling relative to expected bond yields. At best, however, these factors can explain around 86 percent of the trend variation in **a**, after correcting for first-order serial correlation by including an AR(1) variable (i.e., $\bar{R}^2$ for regression 12 was .86). One set of remaining influences is of course the supply-side factors, which have not been incorporated into this reduced form model. It is also possible than at least for some subset of households, increasing optimism does play a significant—if difficult to quantify—role. These considerations are addressed through other types of evidence in the main text.

Data Specifications and Sources

C—Measure of cyclical amplitude. Defined as manufacturing capacity utilization rate. *Economic Report of the President* (hereafter ERP).

D—Outstanding household debt. Data from Board of Governors of Federal Reserve System Flow of Funds Accounts, household sector stock account (hereafter FFA-stocks): "total liabilities."

DEM—Population-weighted mean D/Y, as defined in equation (1.6). Population data from *Current Population Reports*, Series P-10 (hereafter CPR). Age distribution of D/Y from "Survey of Consumer Finances", 1970, 1977, 1983.

H—Ratio of housing to aggregate CPI. ERP.

V—Dt − Dt-1

Y—Nominal household disposable income. FFA-flows.

a—V/Y

c_{loan}—real household borrowing costs, as defined in equation (A.8).

g—rate of change of Y.

i_{loan}—interest rate on household loans. Defined as weighted average of secondary market yields on FHA mortgages (.67 weight) and the rate on 48 month auto installment loans (.33 weight). Mortgage rate is from Cambridge Planning Datadisk. Auto rate is from Data Resources, Inc.

p—expected rate of inflation. Defined as a weighted lagged value of the annual change in the CPI, $p_t = .75p_{t-1} + .25p_{t-2}$. CPI rather than CPI-X1 is used here to retain consistency with the specification of H.

r_{bond}—expected bond yield. Defined as long-term Treasury bond yield minus p. Bond data from Cambridge Datadisk.

r_{eq}—expected real return on equity. The real return is defined here as the dividend/price ratio plus the real change in the Standard and Poor's Composite Index of 500 stocks. The real change in S&P 500 is derived by deflating the nominal level by $[.75(CPI_{t-1})] + [.25(CPI_{t-2})]$, than calculating the rate of change in the real S&P 500. CPI rather than CPI-X1 is used here to retain consistency with the specification of H. Data on the dividend/price ratio and S&P 500 are from the *Economic Report of the President*.

r_{loan}—i_{loan} − P.

w—average statutory income tax rate. Assumed at .25 percent.

Appendix B. Utilizing Survey of Consumer Finance Data

The use of the Surveys of Consumer Finances for 1970, 1977, 1983, and 1986 presented several technical difficulties. We describe them here under two broad categories: comparability and estimation.

Comparability

To be strictly comparable, the figures obtained for all four years have to be based on identical random sampling and imputation procedures. In fact, the 1970 and 1983 surveys come close to meeting this test of comparability, while the 1977 and 1986 surveys do so to a far lesser degree.

The 1970, 1977, and 1983 surveys are all random samples. They are different in the manner in which imputed values were generated when direct survey evidence was missing. For 1970 and 1983, Federal Reserve researchers did extensive work to generate a nearly full set of imputed values. No such imputation project has as yet been conducted for 1977. Therefore, for 1977 (and for the other years where needed), we performed imputations based on simple procedures and with limited resources. Inevitably, some disparities in the results for 1977 relative to 1970 and 1983 will result because of these differences in imputation methods.

More serious problems emerge with the 1986 survey data. First, the 1986 survey did not ask direct questions about outstanding consumer debt levels, but only about size and frequency of payments for regular payment consumer loans. We therefore had to impute all consumer debt figures based on the payment data.

In addition, the 1986 survey, in contrast to those of the other years, was not a random sample. Rather, it consisted of reinterviews of households in the 1983 survey. This creates serious problems for comparative purposes, especially because a high percentage of the 1983 pool did not sit for the 1986 follow-up interview, and the pattern of missed follow-up interviews was skewed according to the ethnic background of households—about 33 percent of white households compared to 52 percent of nonwhite or Hispanic households were not reinterviewed. To compensate for this problem, Federal Reserve researchers generated sampling weights for those households that did respond. The weights were derived from demographic data for the U.S. population as a whole. The expectation is that by assigning relative weights to those households that were reinterviewed, a closer approximation of the actual financial conditions of U.S. households is achieved.

This weighing procedure was also used for another purpose, which further complicates the situation with the 1986 data. In the 1970, 1977, and 1983 random samples, wealthy households tended to be seriously underrepresented. This problem was also recognized by the Federal Reserve. To compensate here, the researchers undertook a supplemental survey in 1983 of 400 households in the top 1 percent of the income distribution, and these 400 households were then included in the 1986 reinterviews.

The weighing procedure was thus used to incorporate these households within the main surveys. No similar high income supplements were developed for 1970 or 1977.

We therefore have three sets of data for both 1983 and 1986: "unweighted base samples," which exclude the high income supplements and do not control for the reinterview gaps in 1986; "weighted base samples," which exclude the high income supplements but control for the 1986 reinterview gaps; and "full samples" which address both the reinterview problem and the underrepresentation of wealthy households.

These weighting procedures are appropriate methods of controlling for both 1986 nonrespondents and the underrepresentation of wealthy households. In principle therefore, the full samples are the most legitimate data sets. However, comparisons between the 1980s full sample figures and the survey data for the 1970s are difficult, since the 1970s surveys do not include high income supplements and are not otherwise weighted. Practically speaking, this is not a problem with the 1983 data. This is because, except for the fact that a higher proportion of wealthy households are included in the full sample, the main 1983 results do not change substantially according to whether base or full sample, weighted or unweighted data are used.

With the 1986 data however, the results do vary significantly according to which procedure is employed. In particular, the aggregate debt/income ratio for 1986, a figure which we are most concerned to track over time, varies considerably according to the procedure employed. This is especially troubling because when weighted full sample data are used, the aggregate 1986 debt/income ratio, at 64.7 percent, falls below the weighted full sample figure for 1983 of 66.5 percent. This pattern is in sharp contrast to the aggregate figures based on the Flow of Funds Accounts, which, as we have seen in Figure 1, show the debt/income ratio rising from 65.0 percent to 74.6 percent between 1983 and 1986. The 1983 and 1986 figures based on either the unweighted or weighted base sample do correspond to the Flow of Funds results, in terms of the direction if not the magnitude of change. This is shown in Table 11. One might therefore argue for the superiority of the unweighted or weighted base sample figures for comparative purposes. Unfortunately, these samples face equally serious problems. The unweighted data do not control for the high percentage of nonwhite nonrespondents, and this pushes the average income figures upward significantly. The weighted base sample produces skewed results because the weighting system is designed specifically to incorporate the supplemental high income families that the base sample excludes.

TABLE 11

Aggregate Debt/Income Ratios Using Alternative Measures of Survey Data

(percentages)

	1983	1986
Unweighted Base Sample	63.9	73.0
Weighted Base Sample	63.9	67.7
Full Sample	66.5	64.7

In short, for 1986 we are left in something of a quandary in which none of the alternative data sets is consistently satisfactory or even relatively better on a consistent basis for comparing household finances in 1986 with the other three years. As such, we present evidence for 1986 with caution, drawing from both the full and base sample data. Generally, we first present full sample data for debt and income values and base sample data for asset values. This is because the variance of debt and income figures is lower than with assets, and therefore less subject to large deviations when switching from base to full samples. This implies that 1983 and 1986 full sample figures are relatively more comparable to the unweighted base sample figures of 1970 and 1977. With asset figures, where variances are relatively large, base sample figures are more comparable with data from 1970 and 1977. In addition, we recognize that the 1986 figures—from both the full and base samples—are most useful in showing relative shifts between segments of the population in 1986, and less useful at accurately measuring magnitudes of change over time. These considerations are noted in the text as specific data results are presented.[25]

A final important consideration in assessing the disaggregated data is that overall conditions in the U.S. economy during the four survey years was not comparable: in both 1970 and 1983, the economy was emerging from recessions, while 1977 and 1986 were mid-periods in expansions. The reason this is important is because from the Flow of Funds figures we know that the debt/income ratio fluctuates sharply over the business cycle, rising in upturns and falling in recessions. Given this, we should be careful to separate cyclical fluctuations in household financing patterns from changes in the trend. Further, because we recognize the figures for 1970 and 1983 as being more reliable, we should attach more weight to comparisons between these low years in measuring changes over time.

Estimation

Two types of estimation were performed with the data from the Surveys of Consumer Finances for 1970, 1977, and 1986 (no estimation was necessary with the fully cleaned 1983 data tape). The first involved generating values for outstanding debt from data on loan amounts, interest rates, payment schedules, and payment amounts. The second involved imputing values for debt, nonliquid assets, and income in some cases where survey participants had not responded to questions. Both methods are described in what follows.

Generating Outstanding Debt Values. The 1986 sample did not include information on outstanding installment and real estate debt, but did provide data on monthly payments. Based on the available information, outstanding balances B were derived as follows:

$$B = P[1-((1/(1+r)\Sigma)/r)] \tag{B.1}$$

where r is the interest rate on the debt; n is the number of payments remaining and P is the payment amount. This formula is developed in Greynolds et al. (1984).

Only information on P is given in the 1986 sample. To estimate B therefore required that values for r and n be assigned. The values for r were estimated as $r_1 = 13.3$ percent for installment loans and $r_2 = 10.3$ percent for real estate loans. These figures are based on average market interest rates in 1986 obtained from the Federal Reserve.

To generate values for n, we had to assign values for loan maturities m and the proportion of payments remaining z: $n = m^*z$. We derived figures for loan maturities from Federal Reserve data: $m_1 = 46$ months for installment debt and $m_2 = 102$ months for real estate debt. We estimated $z = .65$. Normally, z is roughly estimated at .50, on the assumption that at any given time, an average of half of all loan payments will remain outstanding. But this rule of thumb ignores business cycle effects, in which loans outstanding vary directly with the business cycle. Thus, according to Flow of Funds Data, aggregate outstanding installment debt for 1986 was 35 percent greater than the mean outstanding debt for 1980–85. The figure $z = .65$ was derived from this relative level of indebtedness for 1986 (full details on its derivation are available from the author). However, estimates of B were also generated after assigning values for z of both .60 and .70. We found that changing z within this range did not significantly affect any of the major results.

Imputing Missing Values. Imputations were generated based on available data for age, income, assets, and debt. As is described in detail below, the age of householder and quintile means of the respondent households were the sources of the imputed values for nonrespondents. This type of approach, rather than econometric estimation, was employed because it is relatively straightforward and, at the same time, able to generate results in essential conformity with those using econometric methods. Moreover, if one can assume that missing values are random within each quintile, then the substitution of quintile means for missing observations will not change the least-squares slope estimator or its variance in econometric estimation (Pindyck and Rubinfeld, 1981, pp. 245–52).

Debt Imputations. For households that did not report figures for debt, but did report income and age of householder, the income and age figures

were used to estimate debt values for each specific type of debt. The steps taken were as follows:

1. Households for which B values could be generated by (B.1) were grouped by income quintile. Mean outstanding balances $(\bar{B}^d)Y_n$ for each specific type of debt **d** were then generated for each income quintile Y_n.

2. The households with generated debt values were then grouped by age of householder according to the age groupings shown in Table 3 of the main text. Mean values $(\bar{B}^d)$ for each type of debt **d** were then generated for each age group **e**. "Age weights" $(G^d)_e$ for each type of debt were then assigned households in each age group as

$$(G^d)_e = (\bar{B}^d)_e/\bar{B}^d, \tag{B.2}$$

where B^d is the mean balance for the entire sample.

3. Imputed debt balances $(B^t)_n$ were then derived based on income quintiles and age weights as

$$(B^t)_n = (G^d)_e \times (\bar{B}^d)Y_n. \tag{B.3}$$

That is, all households that reported income and age but insufficient debt data were assigned the mean balance (for each specific debt type) of their income quintile, adjusted by the age of the household.

Income Imputations. Households that did not report income but did report values for asset holdings, age, and debt were imputed incomes in a manner similar to that for debt imputations.

1. Households that reported income, assets, and age were divided into asset quintiles, and mean incomes $(\bar{Y})Q_n$ were generated for each asset quintile Q_n.

2. Following (B.2), income age weights were then generated for those households which reported income, assets and age,

$$(G^y)_e = (\bar{Y})_e/\bar{Y}, \tag{B.4}$$

where $(Y)_e$ is the mean income for age group e and Y is the mean income for the entire sample.

3. Imputed incomes were then derived from reported nonliquid asset and age data as

$$(Y^t)_n = (G^y)_e \times (\bar{Y})Q_n. \tag{B.5}$$

This says that imputed incomes $(Y^t)_n$ for households falling within asset quintile n is equal to the mean income $\bar{Y}$ of income-reporting households in asset quintile Q_n adjusted by the age weight $(G^y)_e$ for households in age group e.

4. Once households were assigned imputed incomes $(Y^I)_n$, their reported debt balances were included in the aggregate debt figures.

Asset Imputations. For those households reporting income and age, asset values were imputed in a manner similar to the procedures for debt and income imputations. Mean asset holdings per quintile $(\overline{Q}_n)Y_n$ were derived for each income quintile. Age weights were then assigned as

$$(G^q)_e = (\overline{Q})_e/\overline{Q}. \tag{B.6}$$

Imputed asset values were then generated as

$$(Q^I)_n = (G^q)_e \times (\overline{Q})Y_n. \tag{B.7}$$

This says that imputed asset holdings Q^I for households falling within income quintile n equals the mean asset holding of income-reporting households falling within income quintile n adjusted for the age weight (G^q) for households in age group e.

Number of Imputations

	1970	*1977*	*1986*
Debt			
Mortgage	—	13	—
Installment[2]	—	571	—
Credit Card	5	78	922
Real Estate	4	16	—
Income	—	—	374
Assets	411	—	16

Selection of Active Sample

Households were included in the active sample if, at the least, they reported values either for (a) income and age; or (b) assets, debt and age, but not income. If they reported no figures for (a) age or (b) either income or assets plus debt, they were eliminated from the sample. For the 1970 sample, none of the 2,576 households were rejected by these criteria. For 1977, 76 of a total of 2,563 households were rejected, leaving 2,487 in the active sample. None were rejected from 1983 or 1986.

Additional Adjustments

For the 1970 survey, four households were removed from the active sample as outliers, leaving 2,572 in the active sample. Other small ad hoc adjustments were made with all three surveys to improve the quality of the estimates. A complete accounting of these adjustments are available from the author.

Endnotes

[1] A sampling of stories expressing serious concern over the situation are "Playing with Fire: As Speculation Replaces Investment Our Economic Future is at Stake," *Business Week*, 9/16/85; "Debt Happy Americans Cause Fed Foreboding," *Wall Street Journal*, 4/28/86, p. 1; "Ailing Economy: Debt Buildup Called Cause," *New York Times*, 7/29/86, p. 1; "Deep in Hock: Debt Keeps Growing with the Major Risk in the Private Sector," *Wall Street Journal*, 2/2/87, p. 1; Felix Rohaytn, "On the Brink," *New York Review of Books*, 6/11/87, pp. 3–6; "Borrowing Binge Creates Sky-High Debt: Burden Increases Risk to Economy," *Miami Herald*, 8/10/87; "Eager to Lend: Banks and Thrifts Aggressively Pitch Personal Loans," *Wall Street Journal*, 9/9/87, p. 39; and "As Cheerful as for Hoover: A Debt Dilemma Awaits America's Next President, *The Economist*, 11/5/88, pp. 12–13. More favorable views towards the agreed-upon trends are expressed in "Learning to Live with Leverage: New Risks, New Rewards—and Bigger Failures?" *Business Week*, 11/7/88, pp. 138–56; "Why Consumer Debt May Not Be Too High," *Wall Street Journal*, 10/23/89, p. 1; and "Consumer Borrowing Could Avert Recession," *New York Times*, 11/22/89, p. D1. An interesting article describing similar conditions in Canada is "The New Debt Crisis," *MacLeans*, 4/10/89, pp. 26–27.

[2] The Spring 1989 *Journal of Economic Perspectives* symposium and Pollin (1990a) give overviews of the budget deficit debate. Coffee, Lowenstein, and Rose-Ackerman (1988) present alternative perspectives on leveraged buy-outs.

[3] An additional methodological question, one which has aroused considerable controversy in recent years, is the appropriate technique for adjusting for inflation. In 1983, the Bureau of Labor Statistics adopted a new method for calculating the Consumer Price Index (CPI). They also estimated the new CPI (termed CPI-X) back to 1967. The purpose in changing the CPI was to isolate the price of purchasing shelter "services" from the investment features of home ownership, and include only the price of shelter services in the CPI. Because it is usually impossible to separate "consumption" from "investment" spending when one actually incurs housing costs, it is questionable whether this adjustment provides a more accurate measure of the prices consumers face when they purchase housing. Nevertheless, to avoid controversy on this issue, we utilize here the new CPI estimates, including the retroactive estimates back to 1967.

The revised technique for constructing the CPI is described in Bureau of Labor Statistics (1983). Controversy over the use of the CPI is described in Harrison and Bluestone (1988) and Warren Brookes (1987).

[4] The figure uses a log scale, so the slope of the function is approximately its growth rate.

[5] It is important to make clear the distinction between net borrowing and outstanding debt. Net borrowing is the net amount of credit received within a given time period (a flow), while outstanding debt is the total amount owed (a stock). For our purposes, the primary reason this distinction is important is because, when discussing the financing of expenditures through debt, we are referring to a unit's net borrowing, not to their outstanding debt—i.e., not to the figures shown in Figure 1. Of course, net borrowing and outstanding debt are closely related: outstanding debt is simply the sum of all net borrowings—total borrowings minus repayments. But the behavior of the debt/income and net borrowing/income ratios may differ, for example through price level variations. Appendix A explains why the two ratios deviated in the 1950s and also specifies the relationship between them more formally.

[6] I define household spending as including all personal consumption expenditures plus spending on residential construction. More precisely, household spending is defined here as purchases of:

+ Nondurable Goods
+ Durable Goods
+ Services
+ Residential Construction

There are important differences between the mean and median income figures in addition to their different statistical derivations. The mean figures, derived from the Commerce Department's Bureau of Economic Analysis, are based on a broader definition of income than the median figures, which are calculated from the Census Bureau's Current Population Survey. More specifically, the mean figures include, and the median exclude, the value of in-kind transfers; the cost of fringe benefits provided by employers; the net rental value to owner-occupied homes; wages received in kind; and the value of goods produced and consumed at home. See Ryscavage (1986) for a comparison of the differences in the two series. Harrison and Bluestone (1988, pp. 220–21) present a persuasive argument for the relative superiority of the median figures, and indeed, that the median figures provide "the best single index of real living standards."

It is also important to emphasize that the interpretation of both mean and median trends are highly sensitive to the details of variable specification, the choice of a deflator, the partitioning of the full time period into phases, and even the technique of measuring growth rates. For example, Blecker (1990) shows declining growth trends for both real mean income and consumption in the 1980s relative to the 1970s. However, his time periods and data categories are somewhat different from those presented here. One also observes a decline in real mean income growth if, using NIPA data and the Personal Consumption Deflator, one calculates growth between the beginning and end points of the two phases defined here, i.e., 1965–1974 and 1974–1988. I deliberately report data trends in Figures 7–9 in a conservative manner, as it is sufficient for the argument to recognize that the real growth of neither

mean income nor spending rose in phase two relative to phase one. Of course, to convey a fuller picture of aggregate income trends, one needs to consider observations derived from mean data along with the series on median income, in which the observed growth decline is unambiguous.

[8] Fuller discussions of supply factors, which do not necessarily accord with all the arguments advanced here, include Canner and Maland (1987), Eisenbeis (1986, 1987), Kaufman (1986), Luckett and August (1985), Mayer (1984), Minsky (1986), Wilson et al. (1986), Wojnilower (1980, 1985), Edwards (1987), and Corrigan (1987). My own approach to credit supply questions is discussed in Pollin (1990b).

[9] Indeed, some observers (e.g., Luckett and August 1985) argue that the principal effect of growing credit card use on household debt figures has been not so much to encourage more borrowing, but to overstate the actual amount of debt incurred by counting convenience users of credit cards as debtors. The basis for this argument is that 40 to 50 percent of credit card use is for convenience purposes. From this, it is reasoned that 40 to 50 percent of the revolving credit figures reported in the Flow of Funds Accounts should not be counted as debt at all. But the error in such reasoning was pointed out by Paquette (1985–86). She explains that most of the revolving debt outstanding reflects credit card charges that were incurred by nonconvenience users in previous months. More specifically, Paquette's analysis of the data indicates that new credit card charges accrued in the average billing cycle account in the aggregate for around 30 percent of revolving debt outstanding in any given month. And since only one-half or less of credit card users pay their bills promptly, she concludes that only 15 percent or so of credit card debt in any month reflects convenience use. In short, the extent of overstatement of the debt aggregates through the inclusion of credit card convenience users is minimal. Paquette says that it raises the debt/income ratio by about 0.5 percent.

[10] Scaling was necessary because the *Surveys of Consumer Finances*, from which the age group data on debt and income are derived, reports figures for pre-tax income only, while after-tax, or disposable income data have been presented thus far in the text, in Figure 1 and elsewhere.

[11] The estimates of mean and median home prices shown in Figure 14 were constructed by combining data from two separate data series: the series on existing home prices, published by the National Board of Realtors; and that for new homes, published by the Census Bureau. Relative weights for new and existing home prices were assigned according to the percentages for each of total homes sold. The series begins in 1968 because this is the first year of the existing home price series. The new home price series begins in 1963. Incorporating the new home price figures for 1963–67 in the full period time series does not alter the overall interpretation of the price trend.

[12] For example, actual mean new homes prices rose by 8.4 percent between 1987 and 1988. But the housing price index rose by only 0.1 percent, suggesting that the quality of new homes rose by 8.3 percent between these two years alone. However, between these two years, the percentage of new houses with 1,600 or more square feet of floor area rose from 60 to 63 percent; the percentage of homes with a basement remained constant; homes with a garage increase from 78 to 79 percent; homes with a fireplace rise from 62 to 65 percent; homes with air conditioning rose from 71 to 74 percent; and the percentage homes with wood as exterior wall material rose slightly from 1987 to 1988, but was lower in 1988 than 1985 or 1986.

[13] It was necessary to use this proxy rather than a direct measure such as the ratio of median income/home price. This is because the dependent variable, net borrowing/income, also includes income as a component, thus creating the possibility of spurious correlation between the dependent variable and the income/housing cost explanatory variable. The housing/aggregate CPI is an appropriate proxy because its behavior is sensitive to the same forces that influence the income/home price ratio. As such the two ratios are highly correlated: after controlling for cyclical fluctuations, their correlation coefficient is .93.

[14] Relative contributions are derived as follows. By definition, the aggregate debt/income ratio is $D^a/Y^a = \Sigma D^i/Y^a$. Multiplying the right hand terms by Y^i/Y^i gives $\Sigma[(D^i/Y^i)(Y^i/Y^a)]$ Normalizing the full equation then yields

$$1 = D^i/D^a.$$

Note that, in this expression, relative weights are expressed as simply each quintile's proportion of aggregate debt.

[15] This result is consistent with the more detailed investigations of income concentration in Mishel and Simon (1988) and Harrison and Bluestone (1988).

[16] It is important to point out here that the percentages of households which held debt in the sample years that had financed recreation and home improvement spending is substantially lower than the proportion of respondents who included luxury expenditures as an "appropriate reason for borrowing" in the attitude questions. This may be because the debt figures record debt only at the time in which the surveys were taken. Other households which did not carry luxury-related debt in those years may have held debt previously or would be willing to do so in the future. But the figures also suggest that the responses to attitude questions may exaggerate households' real willingness to borrow to purchase luxuries.

[17] There are several reasons for this. To begin with, as mentioned earlier, the surveys for 1970 and 1977 underrepresent wealthy households, the segment that needs to be considered most carefully. The 1983 and 1986

surveys correct for this through the mechanism of high-income supplements. But in incorporating the high income supplements, comparisons between the 1970s and 1980s surveys then become problematic. In addition, the data available in the tapes show outstanding non-liquid asset holdings (stocks) rather than net purchases in the given year (flows). This is inadequate for two reasons. First, the magnitudes of outstanding assets reflect not only prices and quantities of assets exchanged at a given time, but also changes in the market value of untraded assets. Thus, we would not necessarily obtain an accurate picture of changes in asset purchases over time by looking at outstanding asset holdings. Net purchases may remain stable (as might borrowing to finance such purchases) at the same time that market values of outstanding assets fluctuate. The result would then show a change in asset holdings, even though net purchases did not change. Another reason why outstanding asset values provide inadequate information for our purposes is that the econometric evidence supporting the speculative demand argument showed that changes in net borrowing/income were not mainly sensitive to asset yield changes as such, but primarily to changes *relative* to those for borrowing rates. But we do not have a way of measuring the relative influence of asset yields and interest rates with these disaggregated data. The final problem with these data is that mean values do not accurately represent the asset-holding situation within each quintile. In fact, investment-type asset ownership is not widely dispersed. Rather, a relatively small number of households hold large shares of such assets. This is indicated in Figure 19, which shows the percentage of households holding investment-type assets by quintile. As we see, fewer than 36 percent of households in the lower four quintiles owned them in 1986, and 1986 was the peak year for household asset ownership.

[18] Such views are expressed, for example, in Summers (1986), Meltzer (1986), Van Dyke (1987), Silva and Whall (1988), and Avery, Elliehausen, and Kennickell (1987). This position is also endorsed in several press stories at the end of 1989, which report the views of both academic and business economists (e.g., *Wall Street Journal*, 10/23/89, p. A1; *New York Times*, 11/22/89, p. D1).

[19] However, in assessing the absence of an increase in debt servicing between 1983–86 specifically, it is crucial to recall another factor: according to the survey data, the aggregate debt/income ratio itself did not increase, but rather fell, over this period. This result, as discussed in Appendix B, diverges sharply from the patterns derived from Flow of Funds statistics, and is almost definitely due to several distorting influences within the 1986 data set relative to those for the other years. The 1986 debt servicing ratios, most probably, are biased downward in the same way as the debt/income ratios for this year. This is a consideration which has been overlooked in other recent discussions of household financing patterns (e.g., Avery, Elliehausen, and Kennickell, 1987, p. 773).

[20] A. Charlene Sullivan of the Purdue University Credit Research Center argues that the rise of delinquencies and bankruptcies are the result of the increasingly aggressive marketing practices of financial institutions. In her view, these marketing practices have led to both greater risk and higher profitability (See the interview with Sullivan in *Bankers Magazine*, January-February 1988, pp. 14–17). But given the rise in the failure rate for banks and savings and loans, as well as the corresponding increase in the number of "problem banks," it is unlikely that bank profitability has increased to the extent that risk has. Indeed, it is questionable whether bank profitability, in the aggregate, has increased at all.

[21] Cycle dating is based on NBER dates. The years in which cyclical peaks occur serve as cycle starting points. The one deviation from NBER dates is that the weak and short-lived upturn culminating in the 1981:3 peak has been excluded, so that the most recent peak is 1980:1.

[22] Because the behavioral hypotheses considered here are not derived from a full-scale structural model, the econometric approach taken was to test several alternative regression specifications and evaluate the relative strength of the independent variables based on the range of results. This approach derives from Leamer (1979). Even following this approach, it is important to recognize that the results are sensitive to how variables have been specified. In general, we employ simple specifications; avoiding, in particular, attempts to develop complex lag structures derived from expectational assumptions or related factors. This approach was pursued because we are interested in identifying broad trends and have therefore used annual data. The most important response lags in financial markets are less than one year; complex lag structures with annual data could not therefore appropriately model these short-term behavioral relationships. Nevertheless, the fact that the results are sensitive to specification provides further justification for reporting a range of results rather than a single equation.

[23] Dr. Robert Avery of the Federal Reserve Division of Research and Statistics explained the point about relative degrees of comparability between base and full samples in a phone conversation, 4/88. Some additional points on comparability should also be made. The 1970 and 1977 survey data are both based on unweighted base samples. Nevertheless, the 1986 unweighted base sample is not equivalent to these because the figures come from reinterviews rather than a random sample and, as noted, a high percentage of households did not sit for reinterviews. When we attempt to correct for these missing interviews by utilizing the 1986 weighting procedure, we then confront the additional problem that the weighting procedure is designed to also incorporate the high income supplement results into the sample. Therefore the weighting procedure is most appropriately used in conjunction with the full, not the base, sample for 1986. The 1986 weighted base sample figures are systematically distorted, and thus also not readily comparable to those for 1970 and 1977. But the full 1986 sample is not comparable

to those earlier surveys either since the 1970 and 1977 surveys do not include high income supplements.

[24] This category includes loans to finance home improvements, vehicles, durable goods, and other miscellaneous purchases. The total number of imputations includes each imputation for each type of debt. Each household may thus be assigned more than one imputed value under installment debt. This explains the high total imputation figure for this category. Recall also that all installment and real estate debt for 1986 was estimated, based on reported figures for annual payments on these loan categories.

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